COMPAQ

ProLiant 3000

Setup and Installation Guide

Second Edition (April 1998)
Part Number 296908-002
Compaq Computer Corporation

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About This Guide

The *Compaq ProLiant 3000 Setup and Installation Guide* is intended to help you set up your server for optimal performance. Use this guide with the technical information on the configuration and installation poster, the hood labels, the Systems Reference Library CD, the SmartStart and Support Software CD, and the Management CD for complete and comprehensive reference source materials. For the first time, you can now easily and quickly access much of the server's configuration and installation technical information by using the poster or the hood labels.

How this Manual is Organized

This guide describes the features, configuration, diagnostics, and technical specifications of your new server. It is divided into the following chapters:

- Chapter 1 - Provides an overview of the Compaq ProLiant 3000 server and its features.
- Chapter 2 - Provides a summary of the installation procedure.
- Chapter 3 - Covers the initial Compaq ProLiant 3000 rack-mount installation.
- Chapter 4 - Covers Compaq ProLiant 3000 option and upgrade installation.
- Chapter 5 - Covers Compaq ProLiant 3000 configuration and utilities.
- Chapter 6 - Covers operation and use of the Integrated Management Display (IMD) and Integrated Management Log (IML).
- Appendixes - Cover power cord specifications and regulatory compliances.

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Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These always appear in uppercase
Type	When you are instructed *to type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed *to enter* information, type the information and then press the **Enter** key.

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Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Presents clarifying information or specific instructions.

NOTE: Presents commentary, sidelights, or interesting points of information.

Product Safety Information

Symbols on Equipment

These icons may be located on equipment in areas where hazardous conditions may exist.

Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.
WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

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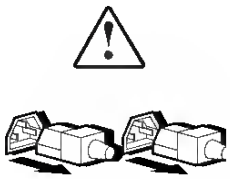
Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection.
WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.
WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



Power Supplies or Systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

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Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq CDs

Compaq Systems Reference Library CD

Compaq Systems Reference Library CD is located in the Reference Information pack and includes the following online documents:

- Diagnostics
- Integration TechNotes
- Part number lists
- SCSI and other options guides
- Server Maintenance and Service Guides (MSGs)
- Server reference guides

Compaq SmartStart and Support Software CD

Compaq SmartStart and Support Software CD is located in the Server Setup and Management pack and contains:

- System Configuration Utility software
- ROMPaq
- Drivers

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Compaq Management CD

Compaq Management CD is located in Server Setup and Management pack and contains:

- Insight Manager Utility software
- Online Help for the Insight Manager Utility

Other Hardcopy Documents

The following hardcopy documents are provided with the server:

- Hood labels located on the inside of Side Access Panel and Top Access Panel
- *Cabling Guidelines for Compaq ProLiant 3000 Servers*
- *Compaq ProLiant 3000 Hardware Installation and Configuration Poster*

Compaq Web Site

The Compaq Web Site has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq Web Site by logging on to the Internet at http://www.compaq.com.

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Telephone Numbers

For the name of your nearest Compaq Authorized Reseller:

In the United States, call 1-800-345-1518
In Canada, call 1-800-263-5868
For Compaq technical support:
In the United States and Canada, call 1-800-386-2172

Elsewhere, call one of the numbers listed in the following table.

Compaq Worldwide Technical Support Telephone Numbers

Location	Voice	FAX
APD	65-7503030	65-7504909
Argentina	54-1 313 3100	54-1 313 3100 Ext 21
Australia	61-2-9911-1955	61-2-9911-1900
Austria	0222-87816-16	0222-87816-82
Bahrain	973-210-214	
Belgium	(02) 716-96-96	(02) 725-22-13
Brazil	55 11 5505-3600	55 11 5505-3922 Ext 4336
Canada	1-800-386-2172	
Caribbean	1-800-345-1518	
Central America	281-378-2206	
Chile	562-274-3007	
China	86-10-834-6721	86-10-834-6713
Colombia	571-345-0266	571-312-0157
Czech Republic	42-2-232-8772	42-2-232-8773
Denmark	45-90-4545	45-90-4595
Ecuador	593-2504540	

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Location	Voice	FAX
Europe/Middle East/Africa	(49) 089-9933-2891	
Finland	9800-206-720 (+358-800-1-206720)	90-6155-9899 (+358-0-61559899
France	(33 1) 41-33-4455	(33 1) 41-33-4263
Germany	0180-5-212111	089-9933-3399
Hong Kong	852-90116633	852-28671734
Hungary	36-1-201-8776	36-1-201-9696
India	(91-80) 559-6023	
Italy	392-57-90300	392-575-00686
Japan	0120-101589	+81 3-5402-5959
Korea	82-2-523-3575	82-2-3471-0321
Malaysia	(603) 718-1636	
Mexico	(525) 229-7910	(525) 229-7988
Netherlands	06-91681616	06-8991116
New Zealand	649-307-3969	
Norway	22-072-020	22-072-021
Poland	48-2-630-3535	48-2-630-3553
Portugal	351-1-4120132	351-1-4120654
Singapore	65-7503030	65-7504909
South Africa	+27-11-728-6999	+27-11-728-3335
Spain	341-640-1302	341-640-0124
Sweden	(46) 8 703 5240	(46) 8 703 5222
Switzerland	411 838 410/2222	01-837-0969
Taiwan	(886) 2-3761170	(886) 2-7322660
Thailand	62-2-679-6222	62-2-679-6220
United Kingdom	44-81-332-3888	44-81-332-3409
United States	1-800-386-2172	1-800-345-1518
Venezuela	(582) 953.69.44	(582) 952.86.70

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France	(33 1) 41-33-4455	(33 1) 41-33-4263
Germany	0180-5-212111	089-9933-3399
Hong Kong	852-90116633	852-28671734
Hungary	36-1-201-8776	36-1-201-9696
India	(91-80) 559-6023	
Italy	392-57-90300	392-575-00686
Japan	0120-101589	+81 3-5402-5959
Korea	82-2-523-3575	82-2-3471-0321
Malaysia	(603) 718-1636	
Mexico	(525) 229-7910	(525) 229-7988
Netherlands	06-91681616	06-8991116
New Zealand	649-307-3969	
Norway	22-072-020	22-072-021
Poland	48-2-630-3535	48-2-630-3553
Portugal	351-1-4120132	351-1-4120654
Singapore	65-7503030	65-7504909
South Africa	+27-11-728-6999	+27-11-728-3335
Spain	341-640-1302	341-640-0124
Sweden	(46) 8 703 5240	(46) 8 703 5222
Switzerland	411 838 410/2222	01-837-0969
Taiwan	(886) 2-3761170	(886) 2-7322660
Thailand	62-2-679-6222	62-2-679-6220
United Kingdom	44-81-332-3888	44-81-332-3409
United States	1-800-386-2172	1-800-345-1518
Venezuela	(582) 953.69.44	(582) 952.86.70

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Chapter 1
Compaq ProLiant 3000 Server Features

Compaq ProLiant 3000 servers deliver state-of-the-art Intel Pentium II processor technology, expanded storage capacity, dual memory controllers, dual peer PCI buses, and advanced high-availability features.

Performance is maximized with up to two Pentium II processors, a new system architecture that improves overall system bandwidth, and up to 512 megabytes (for 300MHz models) or up to 3 gigabytes (for 333MHz models) of buffered EDO ECC memory. Input/output performance is enhanced by features such as Wide-Ultra SCSI-3 hard drives.

Compaq ProLiant 3000 servers provide state-of-the-art reliability and high-availability features, including redundant hot-pluggable power supplies and hot-pluggable Wide-Ultra SCSI-3 drives.

To facilitate upgrade and repair tasks, Compaq designed the ProLiant 3000 server so that no tools are required to enter the chassis.

Standard Features

The following features are standard on all Compaq ProLiant 3000 models, unless otherwise noted.

Processor Boards

- Support for up to two Intel Pentium II processors (1 processor per processor board) with corresponding processor power modules, and 512K cache
- Upgradable to future Intel Pentium II processors

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Cache Memory and System Architecture

- 512-KB secondary (L2) cache
- Compaq ProLiant 3000 System Architecture with Dual Memory controllers and Dual Peer PCI buses

System Memory

- 64-MB standard, extended data out (EDO), error checking and correcting (ECC) DIMMs
- Supports EDO buffered, 60-ns or faster, 32-, 64-, 128-, or 256-MB, , 4-K or 8-K refreshed DIMMs.

  NOTE: Memory option kits contain two DIMMs to equal the total memory. For example, the 32-MB option kit contains two 16-MB DIMMs.

- Expandable to 512 MB (for 300 MHz models) or 3 GB (for 333MHz models)
- Supports up to 6 memory banks, each bank consisting of 2 DIMMs. One bank is installed or removed at a time. Each bank must have each two DIMMs of the same size and speed.

Expansion Slots

Eight I/O expansion slots:

- Five dedicated PCI slots
- Three shared PCI/EISA slots
- Pre-installed Compaq Netelligent 10/100 TX PCI UTP Controller

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Media Bays

The Compaq ProLiant 3000 server can house up to 12 mass storage devices.

- Internal Drives - the server can be configured in either Simplex or Duplex drive cage configurations. Simplex mode configures the drive cage into a single drive cage attached to a single SCSI channel. Duplex mode configures the drive cage into two separate drive cages that are connected to separate SCSI channels. For further information about media bay configurations, refer to Chapter 4, "Installing Hardware Options,"
  - Simplex mode: Seven 1-inch drives or six 1.6-inch drives
  - Duplex mode: Eight 1-inch drives or six 1.6-inch drives
- Preinstalled 16X IDE CD-ROM drive
- Two additional half-height drive bays (removable media area)
- Preinstalled 3 ½" 1.44-MB diskette drive

Keyboard

The keyboard connector is hot-pluggable. Any standard keyboard can be plugged in without powering down the system.

Video

- Integrated PCI Video Controller provides maximum resolution of 1024 x 768, 256 color, non-interlaced
- 16 to 256 colors, depending on graphics mode. 1 MB video DRAM standard
- Supports SVGA, VGA, and EGA graphics resolution

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SCSI

- Dual Channel Integrated Wide-Ultra SCSI-3 controller
- The following optional controller boards are currently supported for controller duplexing or expanding storage capacity (see http://www.compaq.com for updates on device support)
  - Wide-Ultra SCSI-3 Controller
  - SMART-2 Array Controller
  - SMART-2SL Array Controller

High-Availability Features

- Hot-Plug SCSI drive bays
- Hot-Plug Redundant Power supplies
- Optional redundant NIC and SCSI controllers
- Optional redundant fans

System Management

- The Server Parameter Tracking utility provides timely server environment and subsystem information by using a combination of hardware, firmware, and industry standard management software. Information provided by this utility includes fault, performance, and configuration status.
- The Server Fault Tolerance feature provides many disk subsystem and memory system error correction fault tolerance options.
- The Rapid Recovery Services provides fast identification and resolution of complex faults. Highlights of this integrated server management feature include: Integrated Management Logs, Automatic Server Recovery- 2 (ASR-2), and Compaq Integrated Remote Console.

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- Integrated Management Display (IMD) offers a text-based user interface. The IMD displays and stores key system events at the server so that critical information is at your fingertips.
- Integrated Management Log (IML) provides a detailed log of key system events. This log is accessible through Insight Manager, the Remote Insight board, the Compaq Survey utility, the Compaq IML Management utility, and the IMD.

ROM

- Software upgradable firmware including diagnostics
- ROMPaq Utility used to upgrade ROM

Fans

- Standard: Two 120-mm fans and one 92-mm CPU auxiliary fan
- Optional: Two 120-mm redundant fans

Power Supply

- Standard: One hot-plug 750-W (at 220V) power supply
- Optional: One hot-plug 750-W (at 220V) redundant supply (RPS)

Warranty

- Pre-Failure Warranty on processors, memory, hard drives, and power supplies

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Management and Configuration Tools

Compaq offers an extensive set of features and optional tools to support effective server management and configuration. These features are described:

- SmartStart
- Fault Tolerance
- Compaq Insight Manager
- Automatic Server Recovery-2 (ASR-2)
- Integrated Management Display (IMD) standard
- Integrated Management Log
- PCI bus utilization
- Integrated Remote Console (IRC)

SmartStart

SmartStart is the intelligent way to configure your Compaq server with major operating system software. SmartStart helps you achieve a well-integrated server that ensures maximum dependability and supportability. For further information about configuration, see Chapter 5, "Server Configuration and Utilities."

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Disk Drive Fault Tolerance

Disk drive fault tolerance for Compaq servers is covered in more detail in the *Compaq Server Online Reference Guide* on the Systems Reference Library (SRL) CD. The following Redundant Array of Inexpensive Disks (RAID) types are supported:

- RAID 0 - no fault tolerance
- RAID I - mirroring
- RAID 4 - data guarding
- RAID 5 - distributed data guarding

Compaq Insight Manager

Compaq Insight Manager is an easy-to-use intuitive software utility for collecting server information. This information is used by Insight Manager to perform the following functions:

- Sends fault condition alerts to a predetermined destination
- Monitors fault conditions and server performance
- Controls server security and configuration
- Remotely controls servers
- Initiates rapid recovery services

In Compaq servers, every hardware subsystem, such as disk storage, system memory, and system processor, has a robust set of management capabilities. Compaq Full-Spectrum Fault Management prevents faults before they happen, keeps the system up and running in the unlikely event of a failure, and delivers rapid server recovery to normal operation after a fault. See Chapter 5, "Server Configuration and Utilities," for more information.

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Automatic Server Recovery-2 (ASR2)

If there is a critical system failure, Automatic Server Recovery-2 allows you to restart the server and page a designated system administrator. For more information, see the *Compaq Server Online Reference Guide* on the Systems Reference Library CD (SRL).

Security Features

- Power-On Password
- Administrator Password
- Network Server Mode
- Diskette Boot Control
- Power Switch Disable (operating system dependent)
- Serial/Parallel Interface Control
- Remote Access Password

Refer to the *Compaq Server Online Reference Guide* on the Systems Reference Library (SRL) CD for more information on these security features.

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Compaq Integrated Remote Console

When the Compaq ProLiant 3000 server is equipped with an optional supported modem, you can perform a wide range of configuration activities using the standard Compaq Integrated Remote Console (IRC). Some of the IRC features:

- Accessible using ANSI terminal
- Operates independently of the operating system
- Provides for remote server reboot
- Provides access to system configuration
- Uses out-of-band communication with dedicated management modem installed in the server

For more information about the IRC, see the Integrated Remote Console User Guide shipped with the server.

Compaq Integrated Management Display

The Integrated Management Display (IMD) is an LCD display panel that assists you in diagnosing and servicing the server without using a keyboard and monitor.

The features of the Integrated Management Display include:

- **Flexibility** - The Integrated Management Display rotates to support both tower and rack configurations.
- **Manageability** - Typical service and administrative information displayed includes:
  - POST (Power-On Self-Test) messages
  - User-defined administrative information
  - POST and run-time error events
  - System information

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- **Ease of Use** - The Integrated Management Display provides a 16x4 character display and four button control panel to easily navigate through menus.

For information about using the IMD, see Chapter 6, "Advanced Feature Operation."

Supported Drive Configurations

Standard server configurations can include as many as seven SMART-2 or SMART-2SL Controllers, depending on the installed network operating system. The SMART-2 controller can support two Compaq ProLiant Storage Systems or one Compaq ProLiant Storage System and up to eight internal, hot-pluggable hard drives. The SMART-2SL controller can support one Compaq ProLiant Storage System or seven internal, hot-pluggable hard drives.

A maximum practical SCSI configuration, optimizing performance and storage, could include the following:

- One network interface controller (NIC)
- Seven SMART-2 or SMART-2SL Controllers
- Twelve Compaq ProLiant Storage Systems
- Ninety 9.1 GB drives

This configuration would yield a total storage capacity of 819 gigabytes.

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Interlock Switches

WARNING: To reduce the risk of personal injury from contact with hazardous energy, the equipment is provided with safety interlocks. Do not try to defeat these safety interlocks. If an access cover is removed, the power supply is disabled until the cover is properly replaced.

Compaq ProLiant Servers contain built-in interlock switches. This feature:

- Automatically turns the power off when you remove the server side or top covers ensuring your personal safety.
- Protects thermally sensitive components by providing optimal air flow throughout the unit; therefore, removing this cover turns the power off to prevent any undesirable temperature conditions that could result in damage to the equipment.

The interlock switch does not limit access to the hot-pluggable SCSI drives and power supplies. Do not attempt to bypass or defeat this device.

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Chapter 2
Installation Overview

This chapter presents an overview of the installation and configuration procedure for Compaq ProLiant 3000 servers. You are referred to later chapters in this guide for detailed discussions of rack installation, hardware option installation, and configuration. Topics in this chapter include:

- **Server Warnings and Precautions** - This section presents the precautions and warnings necessary to ensure safe installation of your server.
- **Pre-installation Planning** - This section discusses the power, grounding, and temperature requirements of the Compaq ProLiant 3000 server.
- **Installation Procedure** - This section is a summary of the steps you will follow to install your Compaq ProLiant 3000 server.

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Server Warnings and Precautions

WARNING: To reduce the risk of personal injury from hot surfaces, allow the hot plug drives and internal system components to cool before touching.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded electrical outlet that is easily accessible at all times.
- Install the power supply before connecting the power cord to the power supply.
- Unplug the power cord before removing the power supply from the server.
- If the system has multiple power supplies, disconnect power from the system by unplugging all power cords from the power supplies

CAUTION: Be sure that the power outlet you plug your power cord into is easily accessible and located as close as possible to the equipment operator. When you need to disconnect power to the equipment, be sure to unplug the power cord from the power outlet.

CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

CAUTION: The Compaq ProLiant Server must always be operated with the system unit cover on. Proper cooling will not be achieved if the system unit cover is removed.

IMPORTANT: Because of the 100 to 120 VAC electrical rating of each power supply, some local electrical authorities may require either one 15-Ampere circuit for each power supply or one 20-Ampere circuit for each pair of power supplies.

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Pre-installation Planning

This section discusses the power, grounding, and temperature requirements of the Compaq ProLiant 3000 server.

Power Requirements

WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the server. Consult the electrical authority having jurisdiction over your facility wiring and installation requirements.

- The power load needs to be balanced between available AC supply branch circuits.
- The overall system AC current load must not exceed 80 percent of the branch circuit AC current rating.
- If power strips are used, the load should not exceed 80 percent of the power strip's marked electrical current rating.

The installation of this equipment shall be in accordance with Local/Regional electrical regulations governing the installation of Information Technology Equipment by licensed electricians. This equipment is designed to operate in installations covered by the National Electric Code (ANSI/NFPA 70, 1993) and the code for Protection of Electronic Computer/Data Processing Equipment (NFPA-75, 1992).

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This product is also designed for IT power system with Phase to Phase voltage 230 V.

For electrical power ratings on options, refer to the product's rating label or user documentation supplied with that option.

Grounding

For proper operation and safety, this equipment is required to be properly grounded in accordance with NFPA 70-1993, Article 250. All power distribution devices, branch wiring, and receptacles must be "Listed" grounding type devices.

When using power strips for electrical distribution, ensure that ground integrity is maintained for each connection made. Plug each component into a reliably grounded outlet.

Server Temperature Requirements

To ensure continued safe and reliable operation of the equipment, locate the system in a well-ventilated, climate-controlled environment.

The Compaq Maximum Recommended Ambient Operating Temperature (TMRA) for most server products is 35°C (95°F). Therefore, the temperature in the room where the rack is located should not exceed 35°C (95°F).

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Installation Procedure

There are two installation procedures presented in the following paragraphs. Each procedure is a summary of the steps you will follow to install your Compaq ProLiant 3000 server. The procedure you will use depends on whether you are installing a rack-mount model or a tower model server. Detailed instructions for each of the numbered steps are included in later chapters of this guide.

Installing a Rack Mount Model

1. Select an appropriate site for your rack. See the *Rack Planning and Installation Guide* for site selection criteria.
2. Make sure that that stabilizer feet are installed on the rack.
3. Unpack the server.
4. Unpack the rack mounting hardware.
5. Install any hardware options in the server. See Chapter 4 and the options kits for detailed instructions.
6. To make the server lighter and more manageable, do not install SCSI drives in the server until after you load the server into the rack. You may also lighten the server by removing the power supplies and reinstalling them after you have mounted the server in the rack.
7. Set switches: processor board switches, system board switches, and SCSI ID settings.
8. Attach rack mounting hardware to the rack and to the server. See Chapter 3 for detailed instructions.
9. Slide the server into the rack. See Chapter 3.
10. Attach the cable management arm to the cable management arm bracket. See Chapter 3.
11. Attach the optional cable support to the back of the rack. The cable support is needed only if you are routing cables from one side of the rack to the other. See Chapter 3.

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12. Connect cables: keyboard, mouse, monitor, network, and power cables. See *Cabling Guidelines for Compaq ProLiant 3000 Servers.*
13. Turn on the computer and insert the SmartStart and Support Software CD to configure and manage the server. When the server boots from the SmartStart program, it automatically starts the System Configuration Utility. See Chapter 5 for detailed information.
14. Order Activation Keys.
15. Register your server.

For complete details on the SmartStart program, read the SmartStart installation card included in your SmartStart package.

After the SmartStart program has finished configuring your system, you have completed the installation of your new Compaq server.

Installing a Tower Model

1. Unpack the server.
2. Install any hardware options in the server. See Chapter 4 and the options kits for detailed instructions.
3. Set system board switches
4. Connect cables: keyboard, mouse, monitor, network, and power cables. See *Cabling Guidelines for Compaq ProLiant 3000 Servers.*
5. Turn on the computer and insert the SmartStart and Support Software CD to configure and manage the server. When the server boots from the SmartStart program, it automatically starts the System Configuration Utility. See Chapter 5 for detailed information.
6. Order Activation Keys.
7. Register your server.

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For complete details on the SmartStart program, read the SmartStart installation card included in your SmartStart package.

After the SmartStart program has finished configuring your system, installation of your new Compaq server is complete.

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Chapter 3
Rack-Mount Server Installation

This chapter covers the following information:

- How to attach the mounting hardware to the server and to the rack
- How to install the server into the rack

You may choose Compaq's optional installation service to install your rack products. See "Optional Installation Service" at the end of this chapter.

For more information about Compaq rack-mountable products, refer to the following Compaq documentation included with the server:

- *Rack Planning and Installation Guide*

  This guide provides you with complete details on Compaq racks and rack-mountable products.

- *Rack Builder* media

  This program allows you to build an online version of your proposed rack configurations. You can add icons of the rack model server and other rack-mount components to a graphic of the rack you intend to use. You can print reports of your simulations that include a list of all the Compaq parts and part numbers that are required for complete installation.

- *Rack-Mountable Compaq ProLiant Server Installation Video*

  This video is about thirty minutes long and contains handy tips and tricks to help you efficiently and safely install your rack-mountable products.

Rack Warnings and Precautions

Before beginning these procedures, make sure you understand the following warnings and caution.

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WARNING: To reduce the risk of personal injury or damage to the equipment, at least two people are needed to safely unload the rack from the pallet. An empty 42U rack weighs 253 LB (115 kg), is over seven ft (2.1m) tall, and may become unstable when being moved on its casters. Do not stand in front of the rack as it rolls down the ramp from the pallet, but handle it from the sides.

WARNING: Because the rack allows you to stack computer components on a vertical rather than a horizontal plane, you must take precautions to provide for rack stability and safety. It is important that you follow these basic instructions to protect both personnel and property, and that you heed all cautions and warnings throughout the installation instructions.

WARNING: Always load the heaviest item first and always load the rack from the bottom up. This will make the rack "bottom-heavy" and help prevent the rack from becoming unstable. See "Rules for the Rack Builder" on the Rack Builder diskette for the rules that govern the vertical placement of rack-mounted components.

WARNING: A rack may become unstable if more than one component is extended for any reason. To reduce the risk of personal injury, always ensure that the rack is adequately stabilized before extending a component outside the rack, and extend only one component at a time.

WARNING: Before beginning to work on the rack, be sure that the leveling jacks are extended to the floor, that the full weight of the rack rests on the level floor, and that either stabilizers are installed or that multiple racks are coupled together for stability.

CAUTION: Do not place anything on power cords or cables. Arrange them so that no one may accidentally step or trip over them. Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.

WARNING: To avoid the risk of personal injury or damage to the equipment, a minimum of two people **MUST** lift the server into the rack. The server weighs about 50 pounds (22.6 kilograms). If the unit is to be loaded above chest level, a third person must assist in aligning the rails while the other two support the unit.

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Rack Temperature Requirements

The operating temperature inside the rack will always be higher than the room temperature, and is dependent on the configuration of equipment in your rack. The TMRA for each piece of equipment should be checked before installation. The maximum internal rack temperature for your configuration should not exceed the values in the following table:

Table 3-1
Rack Internal Temperature Maximums

Equipment Included	Maximum InternalRack Temperature
Rack-Mountable ProLiant Servers	50°C/122°F
Compaq Rack-Mountable options	40°C/104°F
Other manufacturers' options	See other manufacturers' specifications

CAUTION: To reduce the risk of damage to the equipment when installing third-party options:

- Ensure that the option equipment does not impede airflow to the Rack-Mountable ProLiant Servers or increase the internal rack temperature
  beyond the Compaq specified maximum rating.
- Ensure that the Manufacturer's Maximum Recommended Ambient Operating Temperature of the option equipment is not exceeded when installed in the rack.

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Airflow Requirements

Compaq ProLiant rackmountable servers draw cool air in through the front door and exhaust warm air out the rear. Therefore, the front door of the rack must be adequately ventilated to allow ambient room air to enter the cabinet, and the rear door must be adequately ventilated to allow the warm air to escape from the cabinet. Do not block the ventilation apertures.

CAUTION: If a third-party rack is used, the following minimum requirements should be observed to ensure adequate airflow and to prevent damage to the equipment:

Front: The front must have a minimum of 25 inches of unrestricted ventilation.

Side: The clearance between the installed module and the side panels of the rack should be a minimum of 2.75 inches.

Rear: The clearance between the back of the rack and the wall should be a minimum of 30 inches. The equipment should be operating without a rear door.

NOTE: If all of the vertical space in the rack is not filled by components, the gaps that are left cause a change in airflow through the rack and across the components. These gaps should be covered with blanking panels.

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Unpacking the Server

Unpack the server box and locate the materials and documentation necessary to install your rack-mountable server.

Locating Materials and Documentation

All of the equipment needed to install the ProLiant 3000 server in the rack is included with the rack and with the server

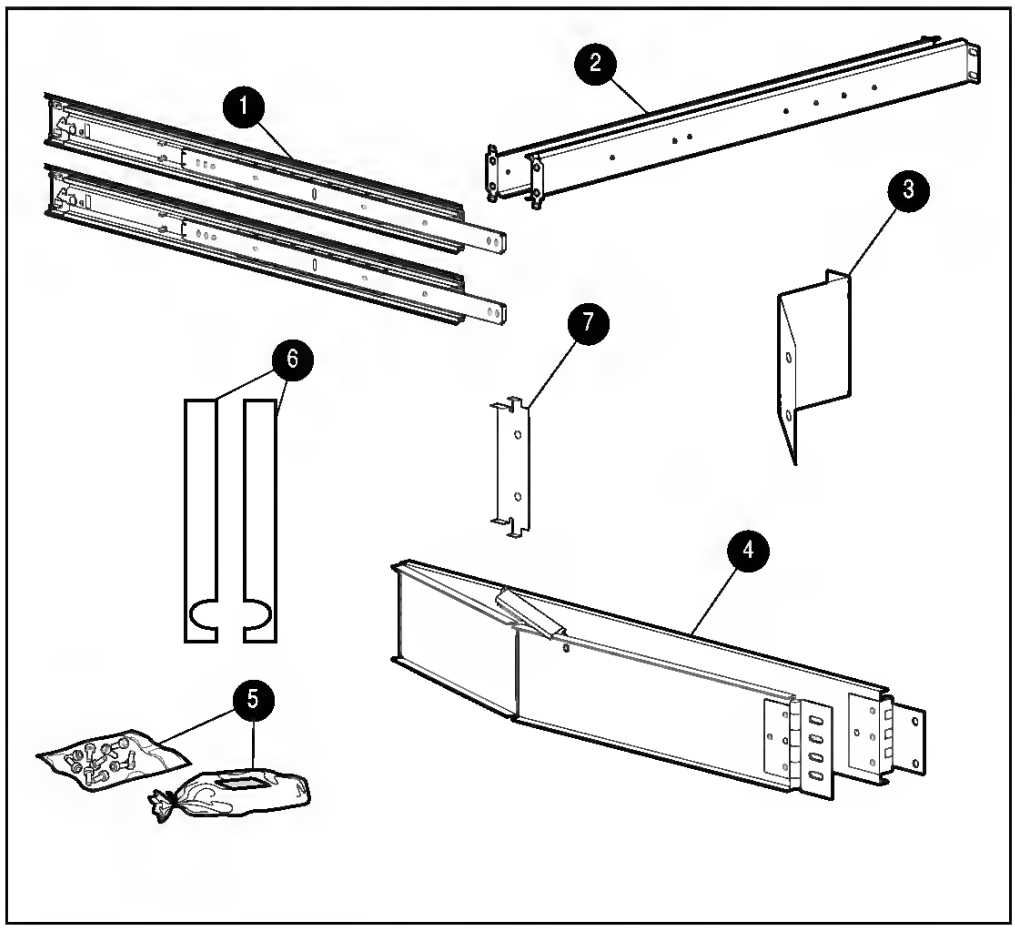

Figure 3-1. Rack mounting hardware included with the server

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Contents of the rack model server box include

- Compaq ProLiant 3000 server
- Cables - see *Cabling Guidelines for Compaq ProLiant 3000 Servers*
- Rack mounting hardware (numbers reference Figure 3-1)

  ❶ One pair slide rail mounting brackets

  ❷ One pair 26-inch slide rail assemblies

  ❸ Cable management arm bracket

  ❹ Cable management arm

  ❺ Cable management arm screws

  ❻ Plastic rail covers (2)

  ❼ Cable management arm support bracket

  ❑ Template that can be used to mark the rack for proper attachment of the rack mounting brackets (not shown)

- Documentation and software

  ❑ *Server Setup and Management Package*

  ❑ *Reference Information Package*

  ❑ *Rack Planning and Installation Guide*

  ❑ *Rack Builder media*

  ❑ *Rack Installation Video*

  ❑ *CompaqCare folder*

  ❑ *Compaq Product Quality Statements*

  ❑ *Owner's Registration folder*

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In addition to these supplied items, you may need:

- Torx T-15 screwdriver
- Phillips screwdriver
- Slotted screwdriver
- Application software diskettes, such as SmartStart
- Options to be installed, such as
  - Optional uninterruptible power supply (UPS)
  - Optional monitor, keyboard, etc.

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Preparing the Mounting Brackets and Slide Rail Assemblies

Each pair of mounting brackets, with attached slide rail assemblies, supports one rack-mountable server.

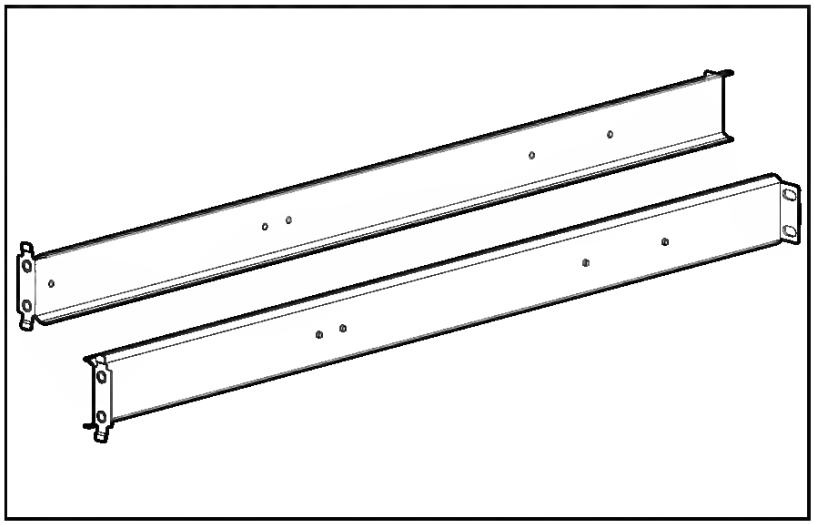

Figure 3-2. Rack mounting brackets; alignment tabs identify the front flanges

Each slide rail assembly consists of an outer bracket rail and an inner component rail (see the following figure). These pieces can be separated; the bracket rails attach to the rack mounting brackets (shown in the previous figure), and the component rails attach to the sides of the server chassis.

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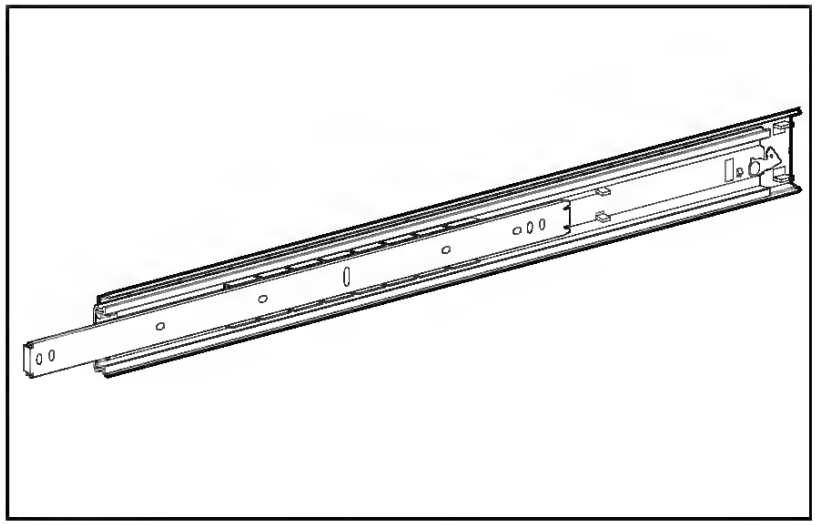

Figure 3-3. Slide rail assembly (outer bracket rail and inner component rail)

IMPORTANT: To make the installation of the mounting bracket easier, attach the bracket rail to the rack mounting bracket before attaching the mounting bracket assembly to the rack. This way, the joined mounting bracket and bracket rail can be fastened to the rack as one assembly.

Attaching the Bracket Rail to the Mounting Bracket

Please read all of the following eight steps before you begin.

1. Unpack the hardware mounting kit. Lay the two-piece slide rail assembly (outer bracket rail and inner component rail) and fasteners on a flat surface along with the mounting brackets and fasteners that came with the rack.
2. Extend the component rail from the bracket slide rail until the component rail release latch clicks. Holding down the latch, slip this piece out of each bracket rail, as shown in the following figure.

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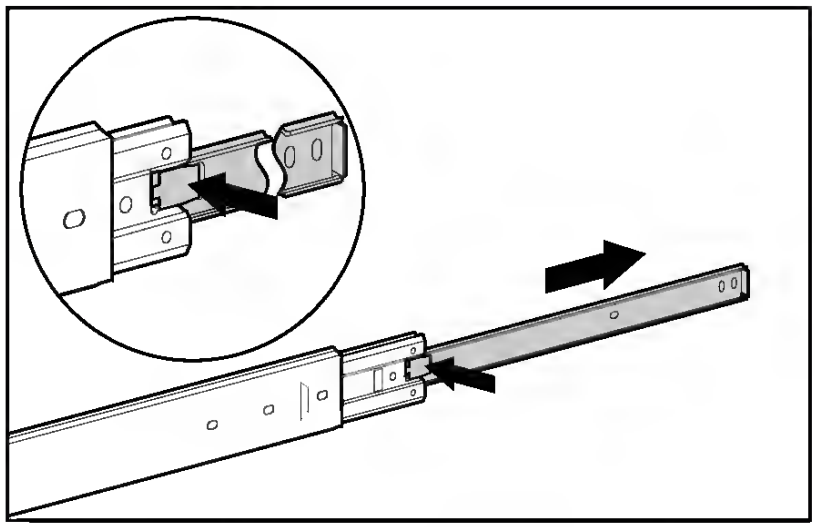

Figure 3-4. Removing the component rail from the bracket rail

3. Put the component rails to one side. You will attach them to the rack server chassis later, in the section, "Attaching Component Rails to the Server."

The next figure shows the separated bracket rail with its inner sliding piece and the flat, one-piece component rail.

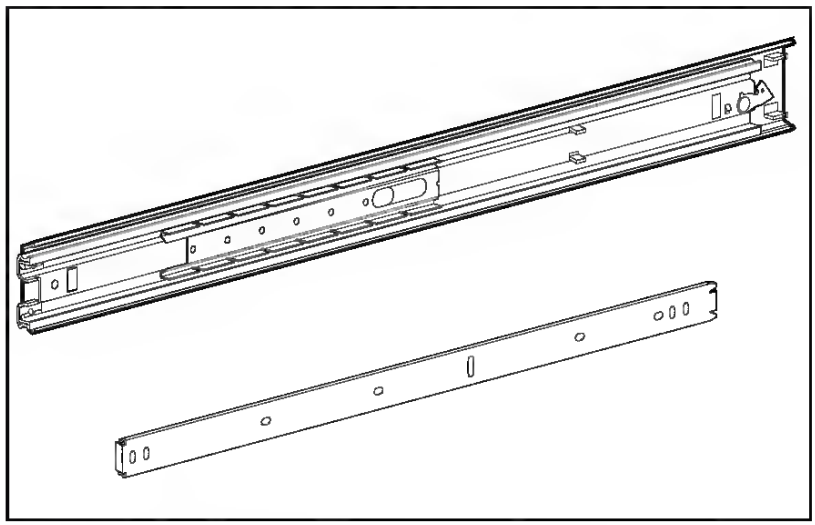

Figure 3-5. Separated bracket rail (top) and component rail

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The bracket rail consists of a fixed outer rail that screws to the rack mounting bracket, and an inner slide on a steel ball bearing movement. This inner slide does not detach.

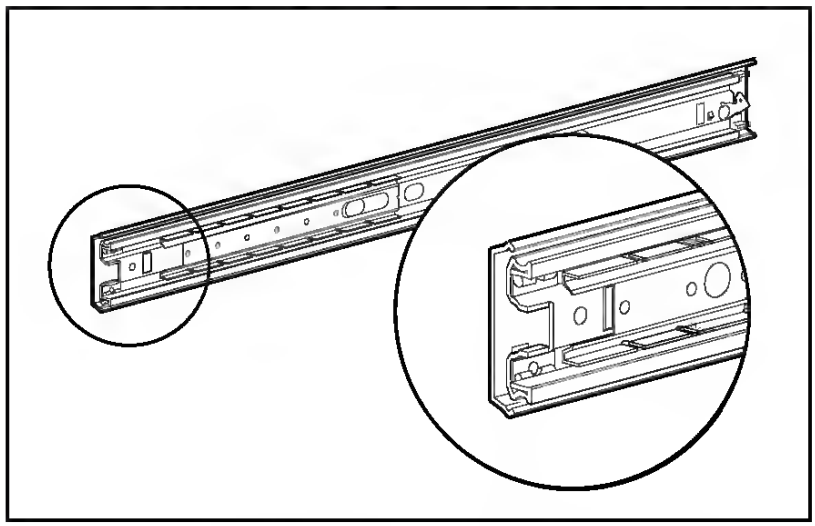

Figure 3-6. Bracket rail with inner slide. The front of the rail is highlighted.

4. Lay the bracket rail inside the mounting bracket with the front of both pieces oriented in the same direction. Align the front screw holes in the mounting bracket and the bracket rail.

   To identify the front of the mounting bracket and the bracket rail:

   - ❑ The front of the mounting bracket has alignment tabs on its flange.
   - ❑ The front of the bracket rail allows the inner slide to move forward on ball bearings.

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5. Extend the inner slide from the front of the bracket rail. With this piece extended, you will see two screw holes aligned in the mounting bracket and the bracket rail. These are the two exposed holes near the back end of the bracket rail and the front hole accessible through a slot in the inner slide.
6. Fasten the bracket rail to the mounting bracket with one 8-32 x 1/4-inch slotted screws. (Do not use nuts or washers with the screws.) See step ❶ of the following figure.
7. Adjust the inner slide to access the other two screw holes, one at a time, through the slotted opening in the inner slide. Use two more 8-32 x 1/4-inch slotted screws to fasten the bracket rail to the mounting bracket. See steps ❷ and ❸ of the following figure.

The following figure shows inserting the screws into the appropriate holes. The screws will line up with the 26-inch markings stamped along one edge of the mounting bracket. These marks identify the mounting holes for the 26-inch slides used in Compaq racks. (The other markings stamped along the opposite edge are for use with slides that support other components.)

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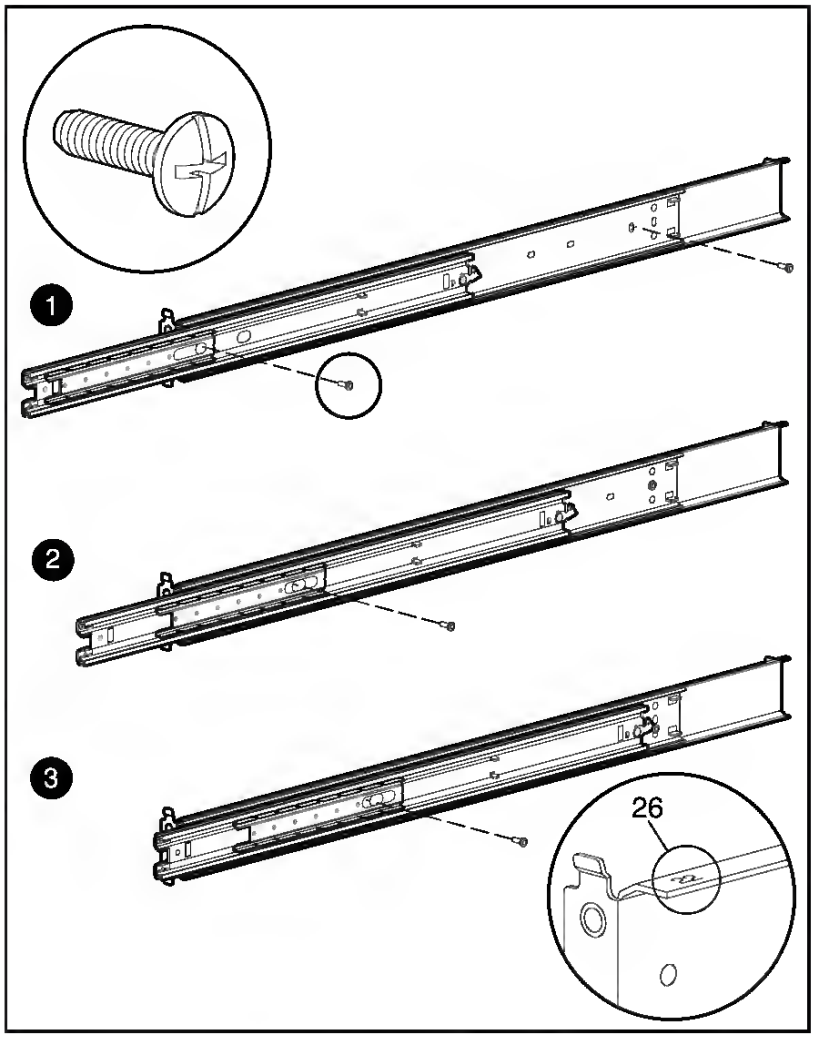

Figure 3-7. Attaching the bracket rail to the mounting bracket

You will use a total of four 8-32 x 1/4-inch slotted screws to fasten the bracket rail to the mounting bracket. When all five screws are fastened, the mounting bracket and bracket rail form a mounting bracket slide assembly that you will attach to the rack.

8. Repeat steps 4 through 7 with the other bracket rail and mounting bracket. You now have a pair of mounting bracket slide assemblies to be attached to the rack.

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Attaching the Mounting Bracket Slide Assembly to the Rack

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that the rack leveling feet are extended to the floor and support the full weight of the rack. Each rack must be level and stable. Racks that are not coupled together require the installation of stabilizers. This **must** be done before you perform any work on the rack.

See the *Rack Planning and Installation Guide* for more information on leveling feet and stabilizers.

Measuring with the Template

The template provided with the server offers an easy and reliable way to properly position the server in the rack. Use the tabs on the template to suspend it from the **lower** hole of a two-hole set of perforations in the vertical side rails. Pencil mark the attachment points for the mounting bracket assemblies, the cage nuts for the face-plate thumbscrews, and the top of the server. Use the tick marks on the rack side rails to insure level installation of the server. See illustrations and instructions printed on the template.

IMPORTANT: Determine the server's place in the rack **before** you start installing the mounting bracket assemblies. To remind you of the proper placement of the server in the rack, refer to the Rack Builder report you printed when you planned your rack configuration. Always mount the heaviest item on the bottom of the rack and work from the bottom to the top.

1. Starting at the bottom of the rack, or at the top of a previously mounted component, measure the screw hole locations for the server's mounting bracket assemblies. Pencil mark the locations on the outside of the rack. Do this on both the front and the back of the rack.

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IMPORTANT: The template is two-sided (front and back) and printed with arrows that show you where the screws will be inserted, both for the mounting bracket assemblies and for the thumbscrews that will secure the server's face plate to the front of the rack.

Align the template carefully with the holes on the rack, to determine the exact placement of the screws.

2. When you mark the positioning of the mounting bracket screws, also mark the positioning in the front of the rack for the cage nuts. These are two slots marked "C" on the template. The cage nuts will hold the thumbscrews through the server's face plate.

Be sure to follow the alignment instructions on the template, and keep the sides of the template squared up with the sides of the rack. Tick marks on the rack's vertical rails will help you maintain the proper alignment.

Be sure to follow the alignment instructions on the template, and keep the sides of the template squared up with the sides of the rack. Tick marks on the rack's vertical rails will help you maintain the proper alignment.

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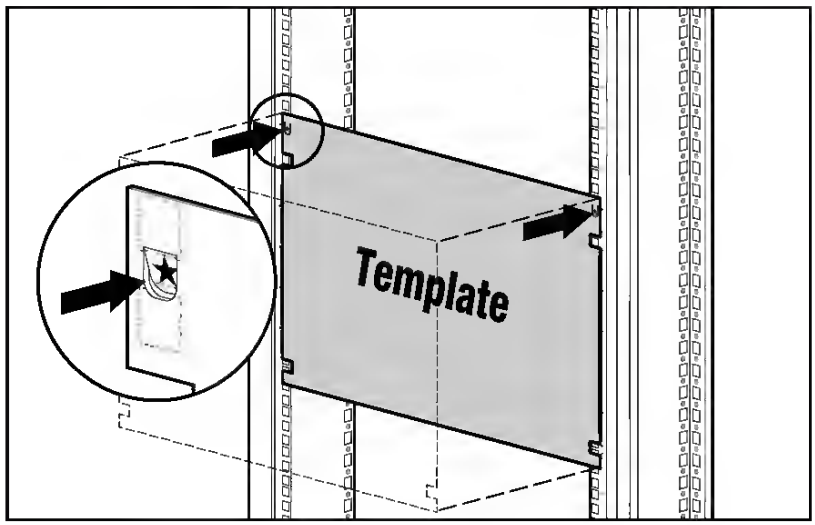

Figure 3-8. Measuring with the template

3. After marking the front of the rack, turn the template over and mark the back rails of the rack. Open the rear door of the rack to access the back rails.
4. On the back of the rack, mark the rail to show the top of the template. This will help you align a template for the next component.

Inserting Cage Nuts in the Rack Frame

After marking the positions for the fasteners in both the front and back of the rack, use the fitting tool to insert cage nuts on the **inside** of the rails at the marked locations. The cage nuts and fitting tool are included in the hardware kit supplied with the rack.

1. Position the cage nut as shown in the following figure, on the inside of the rail.
2. Hook one of the lips of the cage nut through the square rail perforation.

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3. Insert the tip of the fitting tool through the other side of the perforation and hook the opposite lip of the cage nut.

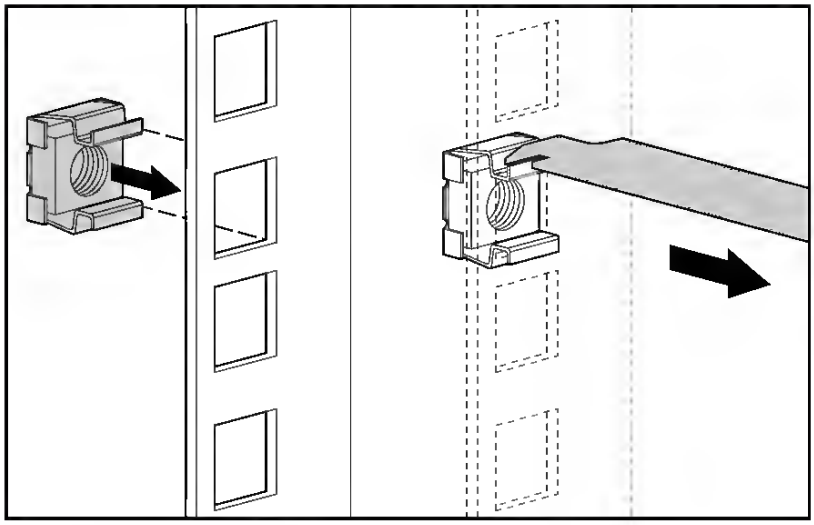

Figure 3-9. Inserting cage nuts

4. Using the fitting tool as a lever, pry the cage nut into position.
5. Repeat for each cage nut.

Attaching the Mounting Bracket Assembly to the Rack

The tabs on the front of the mounting bracket help to align it with the front of the rack frame. Cage nuts are not used for the front attachment of the mounting bracket.

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1. Attach a mounting bracket assembly to the front of the rack first, using one M6 x 1.0-12L Phillips screw in the bottom hole of the bracket. Do not use the washers supplied with the Compaq rack.

IMPORTANT: Use only the bottom hole of the bracket as shown in Figure 3-10

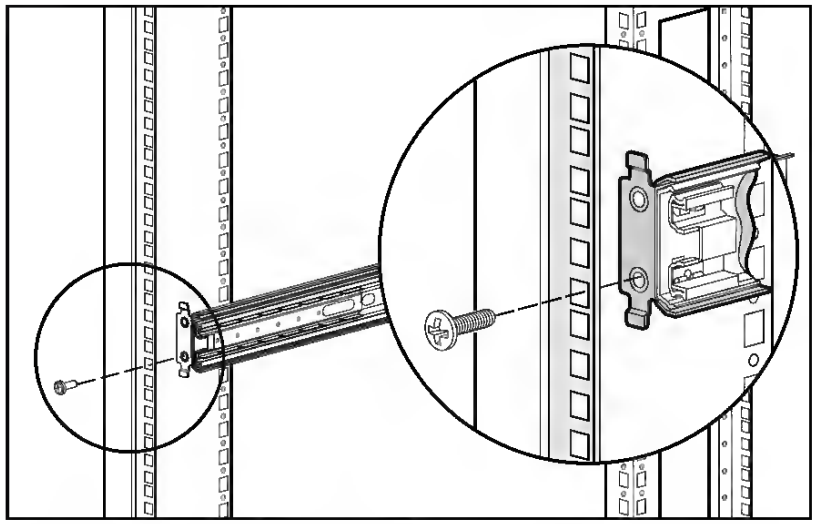

Figure 3-10. Attaching mounting bracket assembly to the front of the rack

2. Carefully align the mounting bracket assembly with the rear rack frame.
3. Secure the back end of the mounting bracket assembly to the back corner brace of the rack with one M6 x 1.0-12L Phillips screw through the bottom hole of the bracket and the cage nut, as shown in the following figure.

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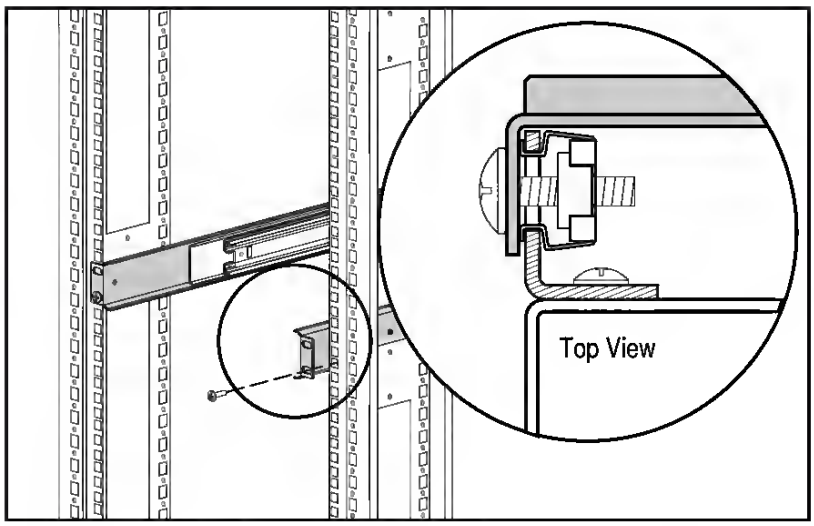

Figure 3-11. Cage nut and back of mounting bracket assembly installed

4. After attaching both mounting bracket assemblies to the rack, prepare the server for mounting in the rack.

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Attaching Component Rails to the Server

1. Place the tab on a component rail at the front of the server chassis. The holes in the component rail will line up only one way with the chassis.
2. Attach the flat side of a component rail to each side of the server chassis with five 8-32 x 1/4-inch Phillips screws. Do not use washers with the screws.

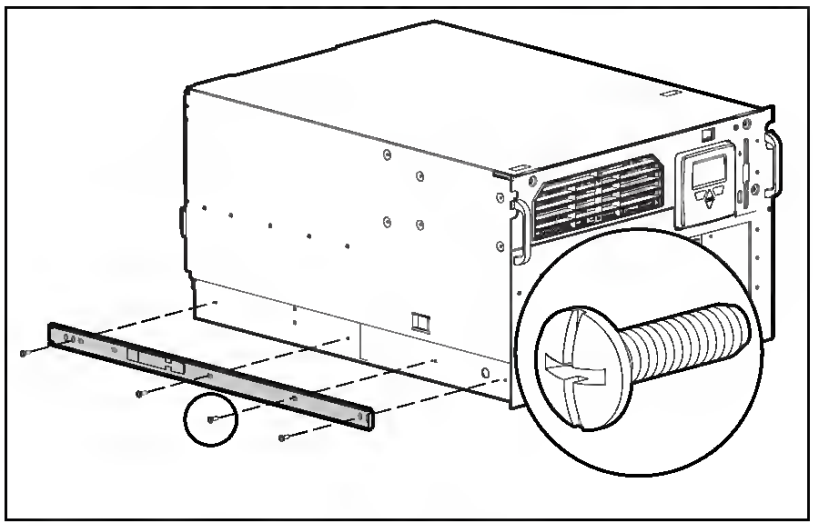

Figure 3-12. Attaching a component rail to the server

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Attaching the Cable Management Arm Bracket

The cable management arm bracket fastens to the top right rear of the rack server's chassis. The bracket provides an attachment point for the cable management arm from the server to the rear frame of the rack.

Attach the cable management arm bracket to the back of the server with two 6-32 x 1/4 Phillips screws.

Attach the rack rail covers to the rack.

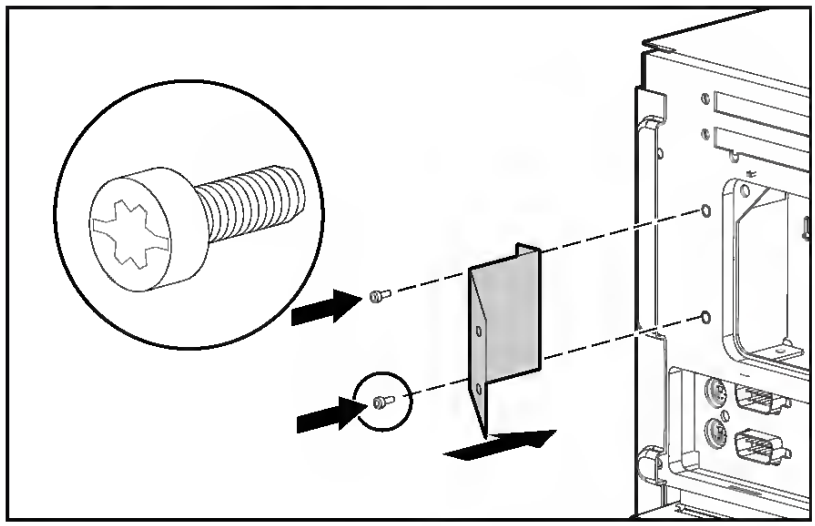

Figure 3-13. Attaching a cable management arm bracket to the server

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Loading the Rack Server

Load and secure the server to the rack with the face plate thumbscrews before continuing to attach any more mounting bracket assemblies. Ensure that this pair of brackets is perfectly aligned and installed and that the server fits before you continue.

WARNING: To reduce the risk of personal injury or damage to the equipment, a minimum of two people **MUST** lift the server into the rack. The server weighs 50 pounds (22.6 kilograms). If the unit is to be loaded above chest level, a third person must assist in aligning the rails while the other two support the unit.

IMPORTANT: To make the server lighter and more manageable, do not install drives in the server until after you load the server into the rack. You may also temporarily remove power supplies and reinstall them after you have mounted the server in the rack.

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1. Pull the slide rails forward from the mounting brackets.
2. Carefully align the server's component rails with the rack's slide rails and slide the server into the rack.

CAUTION: Be sure to keep the component parallel to the floor when sliding the component rails into the slide rails. Tilting the component up or down could result in damage to the rails.

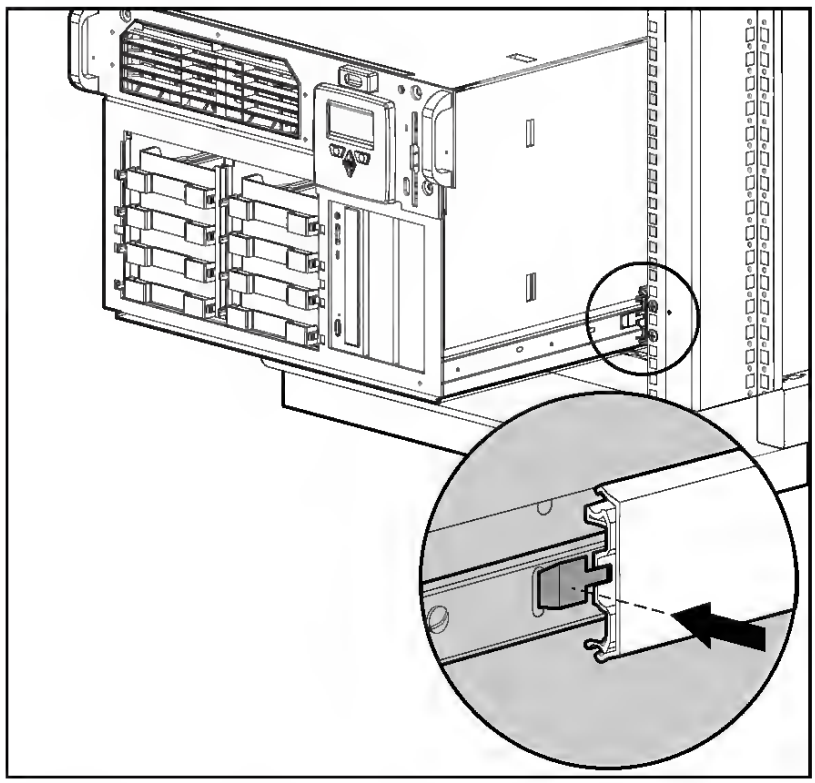

Figure 3-14. Loading the rack server

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WARNING: To reduce the risk of personal injury, be careful when pressing the component rail release latches and sliding the component into the rack. The slide rails could pinch your fingertips.

3. Depress the component rail release latch on either side of the server and slide the server into the rack.

IMPORTANT: The first time you slide the component into the rack, you may have to apply some pressure. After the first time, the ball bearings in the slide will move easily.

IMPORTANT: When servicing the server, fully extend the component until the latches lock. To return the server to the rack, depress the latches and slide the server into the rack.

4. Secure the server face plate to the front of the rack by screwing the thumbscrews into the cage nuts.
5. Tighten the thumbscrews before you close the rack door to prevent the door from hitting protruding thumbscrews.

Attaching the Cable Management Arm

A double-hinged cable management arm and fasteners ship with each server. The cable management arm attaches to the server's cable management arm bracket and to the rear frame of the rack. All cables to and from the server are tied to this arm. The two hinges allow the cable management arm with attached cables to swing out of the way when you need to access the server pull-out trays.

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1. For easier handling, first slide the server into the rack, then attach the cable management arm to the cable management arm bracket. If you attach the arm before loading the server in the rack, the arm may swing around and interfere with the loading process.
2. After you have loaded the server into the rack, attach one end of the cable management arm to the server's cable management arm bracket using two M6 x 1.0-12L Phillips screws. Align the arm to the bracket as shown in the following figure.

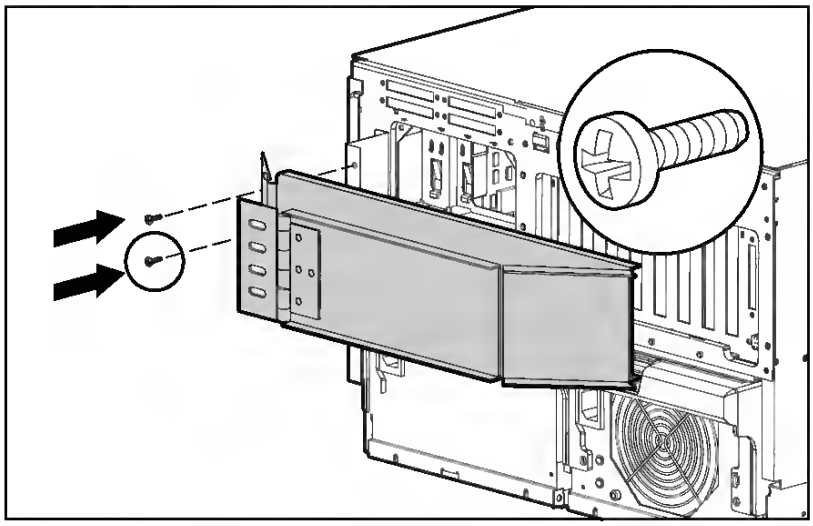

Figure 3-15. Attaching the cable management arm to the cable management arm bracket

3. Align the other end of the cable management arm on the outside of the rear brace of the rack. Align a screw retaining plate on the inside of the rack. Attach the arm to the rack with two 10-32 x 5/8-inch Phillips washer-face hex-head screws.

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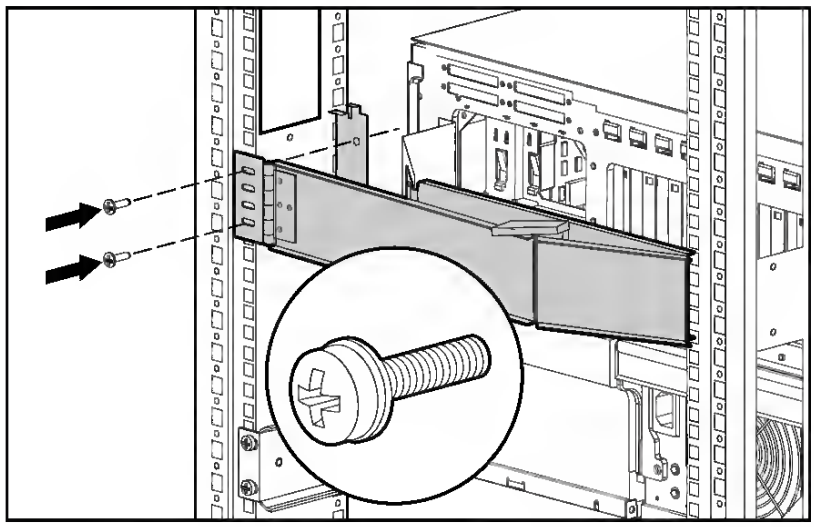

Figure 3-16. Attaching the cable management arm to the rear brace of the rack

Attaching the Optional Cable Support

The optional cable support attaches to both sides of the rack's rear. All cables to and from the server are tied to this support, which allows the server cables to stretch from the right rear of the server across to the cable channel on the other side of the rack, where the other cables are all bundled in the cable channel.

The cable support is needed only if you intend to route cables from one side of the rack to a cable channel on the other side of the rack.

Attach the cable support to both rear braces of the rack using four M6 x 1.0-12L Phillips screws.

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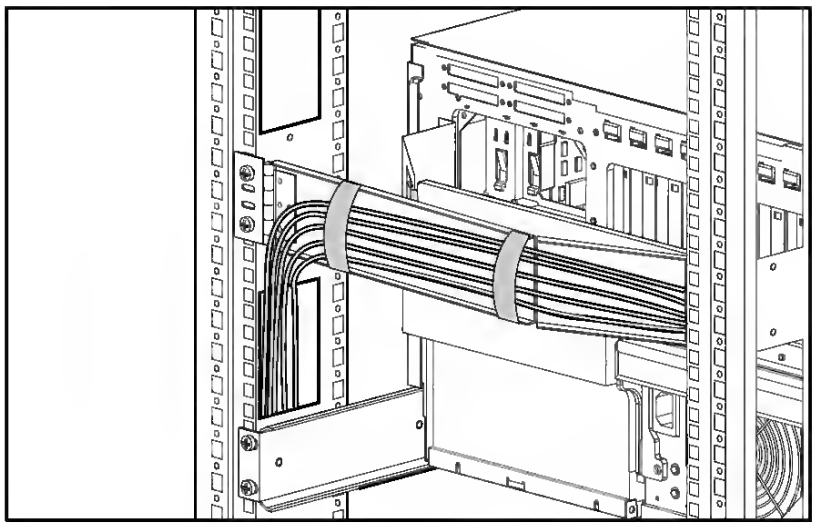

Figure 3-17. Attaching the cable support to the rack

Optional Installation Service

The installation service covers the entire hardware installation from unpacking the components to routing the cables and running a test of the system. In the United States, Compaq will make all of the arrangements to have the rack system installed by qualified Guaranteed Service Providers. An order form with pricing is available from PaqFax, the Compaq fax retrieval service. Call 1-800-345-1518, select PaqFax, and request Document No. 4552. Installation may also be ordered from and provided directly by Authorized Compaq Service Providers.

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Chapter 4
Installing Hardware Options

This chapter is divided into two major parts as follows:

- **Accessing Non Hot-Plug Areas** - you must shut down the server power in order to install options, upgrades or replacements in the following areas:
  - Processor boards and sockets
  - Memory board and sockets
  - System Board
  - Drive Cage Backplane Board
  - Power Supply Backplane Board
  - Three shared PCI/EISA slots
  - Five PCI slots
  - Fans
- **Accessing Hot-Plug Areas** - you can install hot-plug options, upgrades or replacements without shutting down the power in the following areas:
  - SCSI drive bays
  - Power supplies

NOTE: The illustrations in this chapter may vary slightly depending on whether you have a tower model or rack model.

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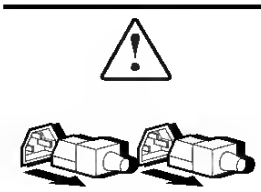
Accessing Non Hot-Plug Areas

To install options, upgrades or replacements in these areas, you must first shut down the server power.

Accessing Processors, Memory Board, and System Board



WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

WARNING: To reduce the risk of personal injury from contact with hazardous energy, the equipment is provided with safety interlocks. Do not attempt to defeat this safely interlock. See the topic "Interlock System" later in this chapter for more information.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure.

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1. Back up your server data.
2. Shut down the operating system in an orderly manner as directed in your operating system instructions.
3. Power down the server and remove the power cord.

IMPORTANT: The system power in the ProLiant 3000 server does not completely shut off with the front panel Power On/Standby switch. The two positions of the switch functions as ON and STANDBY, rather than ON and OFF. The STANDBY position removes power from most of the electronics and the drives but portions of the power supply and some internal circuitry remain active. Consequently, to completely remove all power from the system, you must disconnect the power cord from the server. In systems with multiple power supplies, you must disconnect **all** the power cords to completely remove power from the system.

NOTE: After you move the Power On/Standby switch to the Standby position it may take the operating system up to 30 seconds before shutting down the power.

WARNING: Before removing the server top panel, ensure that the server is turned off and that the power cord is disconnected from the electrical outlet.

---

4. Disconnect any other external equipment connected to the computer.
5. Loosen the two thumbscrews on the front of the unit.

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6. Slide the side cover toward the rear of the unit about 1 inch (2.5 cm); then remove the cover.

NOTE: When you remove the access panel, the interlock switch removes power from the system.

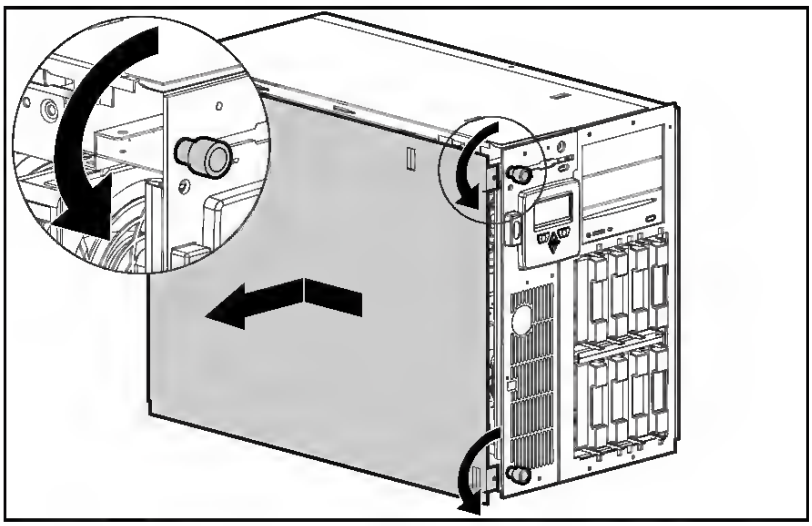

Figure 4-1. Removing the server cover

Accessing the Processor

NOTE: To allow easier access, you can tilt the server on the right side (side opposite the removed panel). Be sure to lock the casters if you do tilt the server. The following figures show the server in the tilted or rack model orientation.

1. If adding a processor board, you must remove a terminator board in the processor slot as shown in Figure 4-2.

NOTE: The terminator board is in place for bus termination reasons and should not be removed except to replace it with a processor board.

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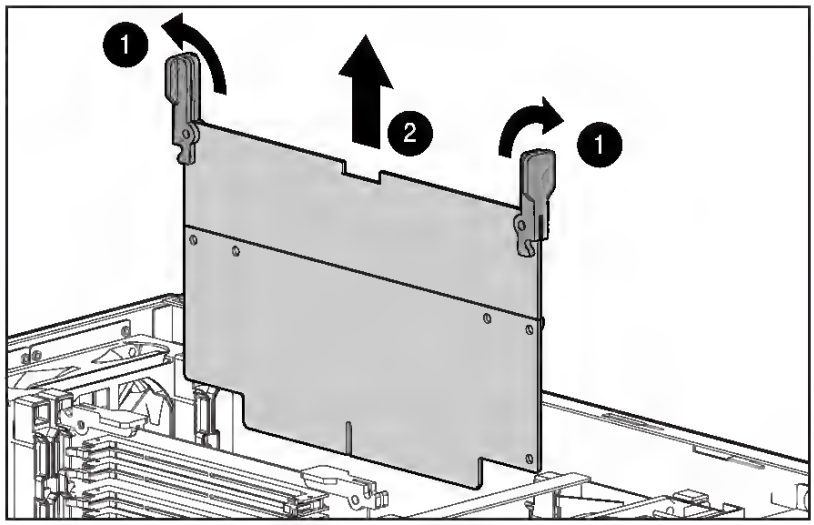

Figure 4-2. Removing the terminator board

2. To install a Pentium II processor board, follow the instructions included in the processor option kit to install the processor on the board. then see Figure 4-3.

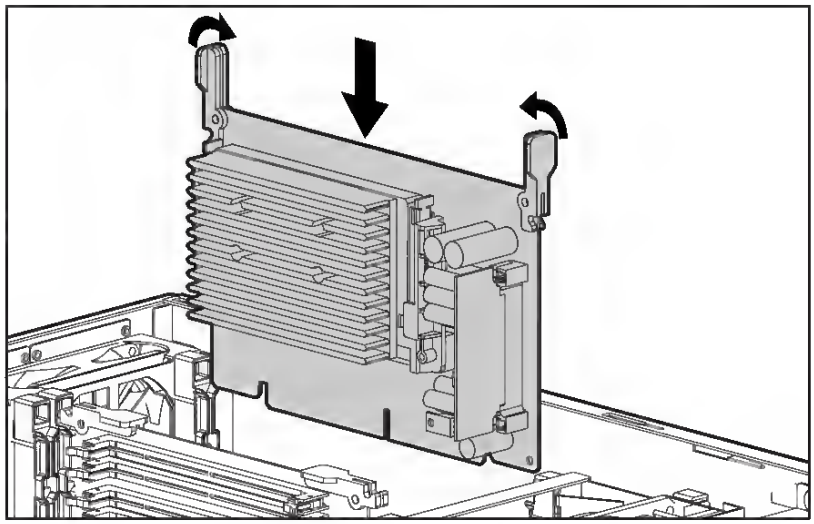

Figure 4-3. Installing the Pentium II processor board

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Accessing Other System Board Components

With the top panel and processor boards removed, as described in the previous steps, you should be able to locate and identify the System Board components shown in Figure 4-4.

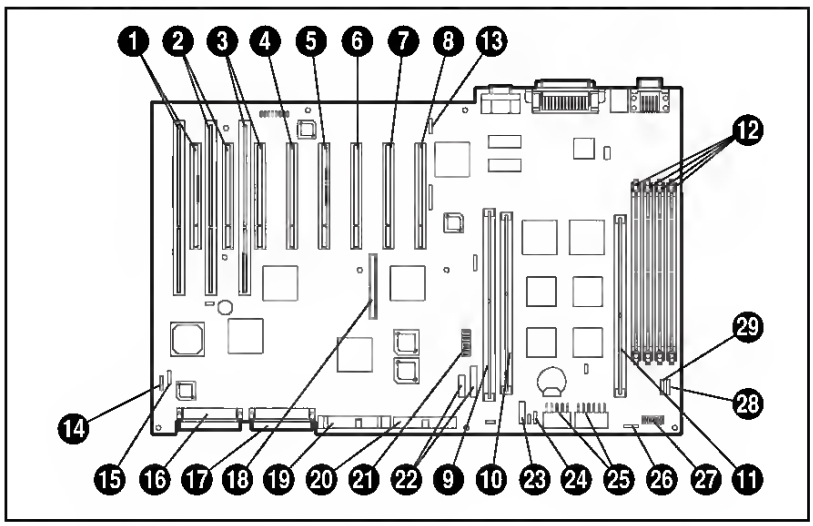

Figure 4-4. System Board Features

#	Component	#	Component
1 - 3	Shared PCI/EISA slots	19	IDE signal cable connector
4 - 8	PCI slots	20	Floppy signal cable connector
9	Memory board slot	21	Processor settings switch
10, 11	Processor board slots	22	IMDconnectors
- 12	Memory DIMM sockets	23	Auxiliary power connector
13	CPU Fan header	24	External battery header
14	I/O Fan header	25	Power Connectors
15	Redundant I/O Fan header	26	Switch/Interlock Floppy Power Connector
16	Internal SCSI connector - Channel A	27	System configuration switch
17	Internal SCSI connector - Channel B	28	Redundant CPU Fan header
18	I_2O feature connector	29	CPU Fan header

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System Board Switches

The following table defines the six switches on the system board. The Open (OFF) position is the default configuration for each switch.

Table 4-1
System Board Switches

Switch	Open (Off) Position	Closed (On) Position
1 Video	Enable integrated video	Disable integrated video
2 Lock Configuration	Configuration can be changed	Configuration can not be changed
3 Rack Mount	System is tower configuration	System is rack mount configuration
4 Diskette Override	Diskette boot is controlled by configuration	Diskette is enabled for booting regardless of configuration
5 Password Enable	Power on password is enabled	Power on password is disabled
6 Maintenance*	NV RAM is valid	NV RAM is invalidated, configuration is lost

* See the *ProLiant 3000 Service and Maintenance Guide* for information on the use of this switch.

Accessing DIMM Sockets on the Memory Board

1. Remove the memory board as shown in Figure 4-5.

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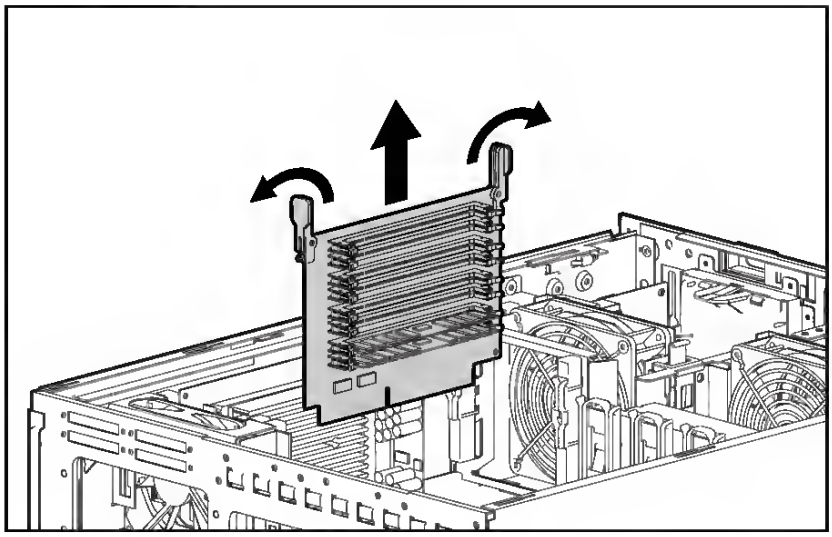

Figure 4-5. Removing the memory board

2. Install DIMMs as shown in Figure 4-6. For information on memory banks, see the following section titled "Memory Banks."

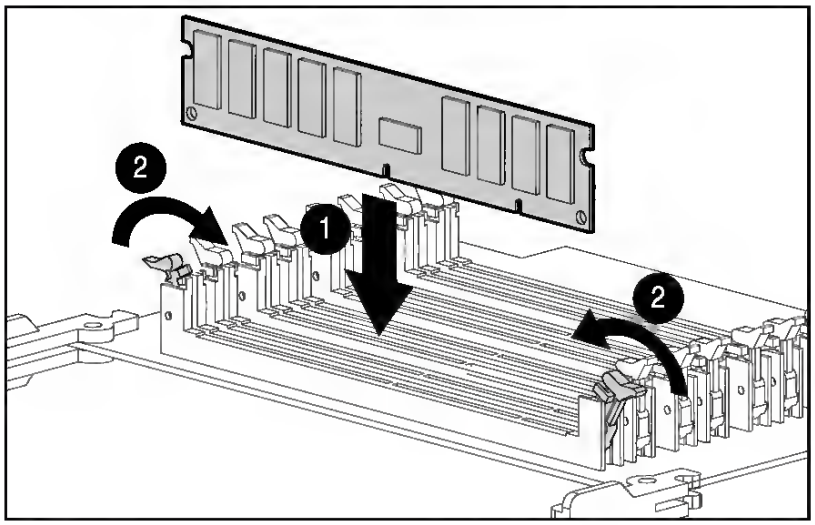

Figure 4-6. Latching DIMMs

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3. Install the memory board as shown in Figure 4-7.

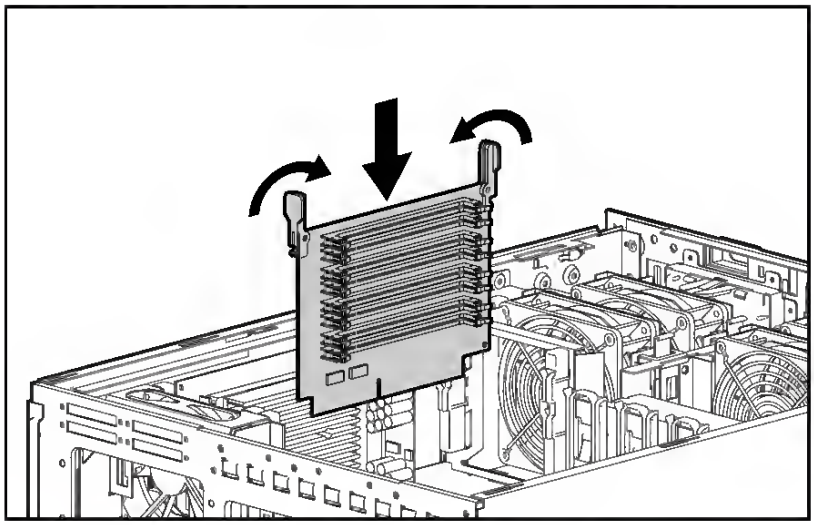

Figure 4-7. Installing memory board

Memory Banks

In the Compaq ProLiant 3000 server, DIMM sockets are grouped in banks of two adjacent sockets. When you add memory, you must add a bank at a time. Memory banks on the system board and on the memory board are identified in Figure 4-8 and Figure 4-9 respectively. Memory banks are also identified on a label on the inside of the access panel.

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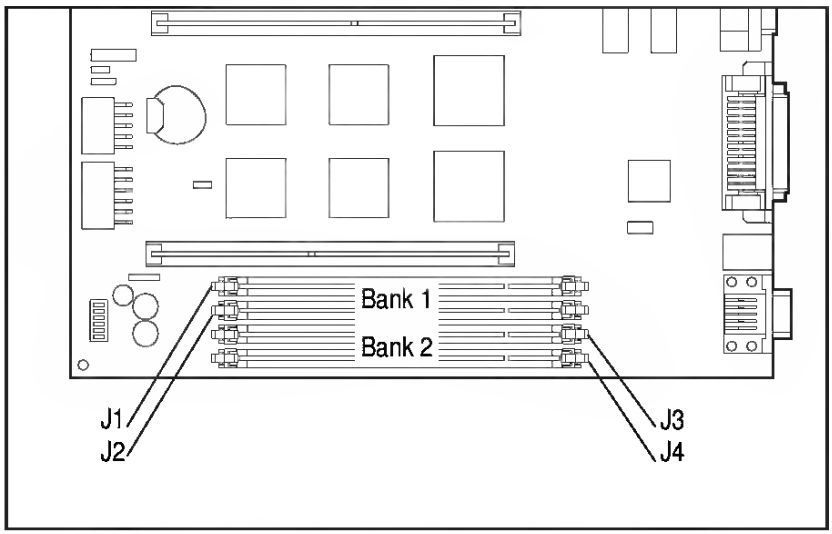

Figure 4-8. Memory banks on the system board

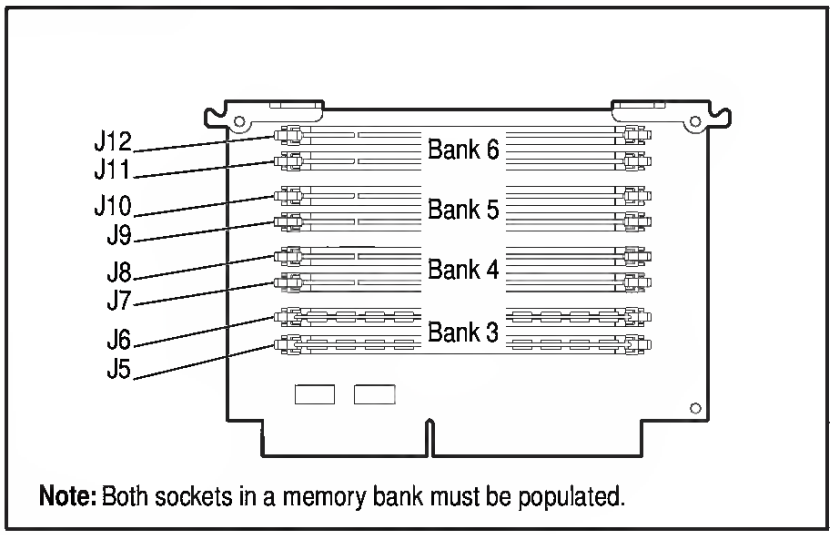

Figure 4-9. Memory banks on the memory board

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For the best performance, DIMM banks should be added in the following order:

First: Bank 3 (as shipped)
Bank 1 (system board)
Bank 4 (memory board)
Bank 2 (system board)
Bank 5 (memory board)
Last: Bank 6 (memory board)

Accessing the Drive Cage Back Plane

These instructions cover the removal of the hot-plug SCSI drive and removable media cage, removal of the Simplex Enable board, and installation of the Duplex Enable board. This procedure enables controller duplexing of the internal SCSI drives. Refer to the *Compaq ProLiant 3000 Cabling Guidelines Reference Guide* for more information on configurating duplex and simplex modes.

1. Remove the side panel as shown in Figure 4-1.

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2. Remove the fans and set them aside. You should not have to remove the cables to the fans.

CAUTION: Never power up the server if both fans have been removed from either the processor or I/O section. Overheating and damage to hardware could result.

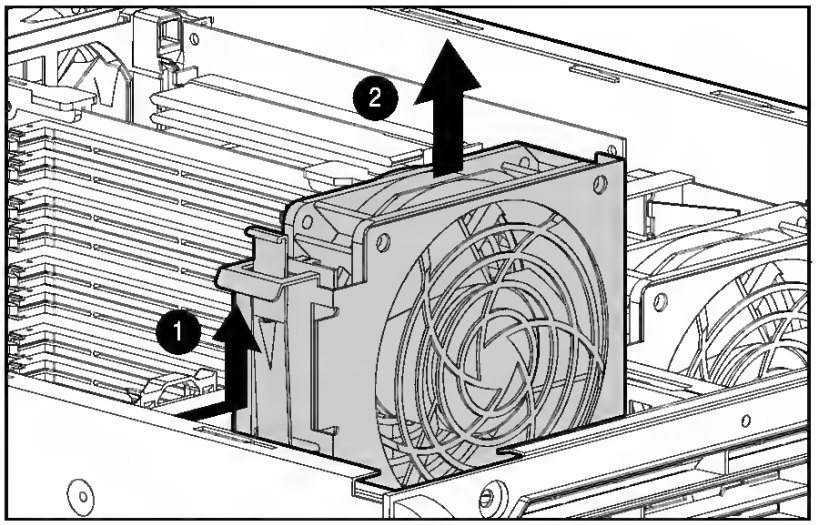

Figure 4-10. Removing a fan

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3. Unlock the server, open the front panel, and slide the front panel up and away from the server.

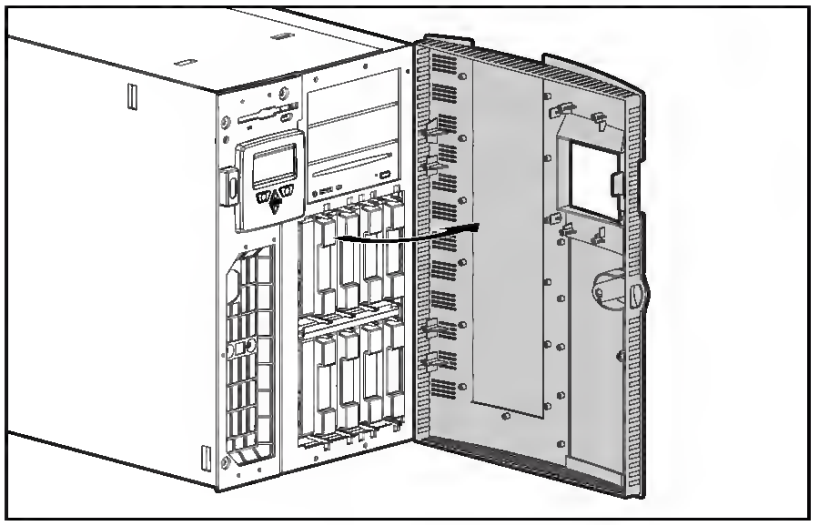

Figure 4-11. Removing the front panel

4. Loosen the thumbscrews on the front of the drive cage.
5. Pull out the latch at the back of the drive cage (shown in Figure 4-13) and pull out the drive cage 2 to 3 inches to allow better access to cables.

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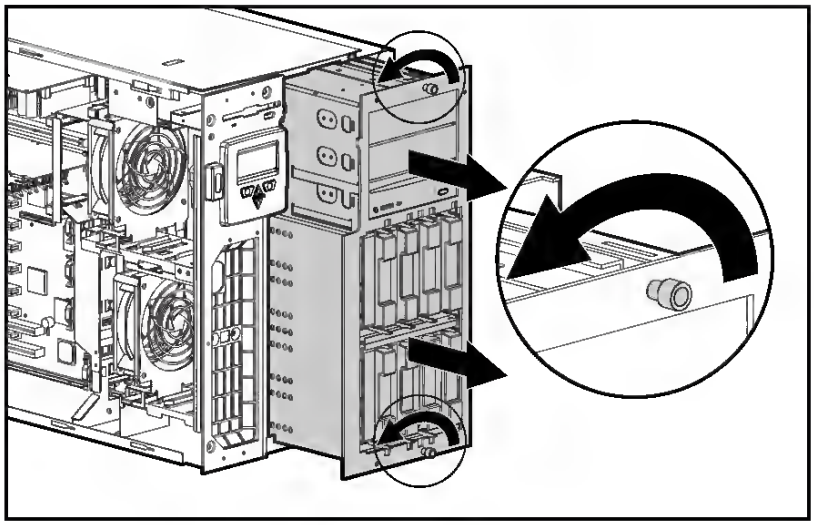

Figure 4-12. Partially pull out the drive cage

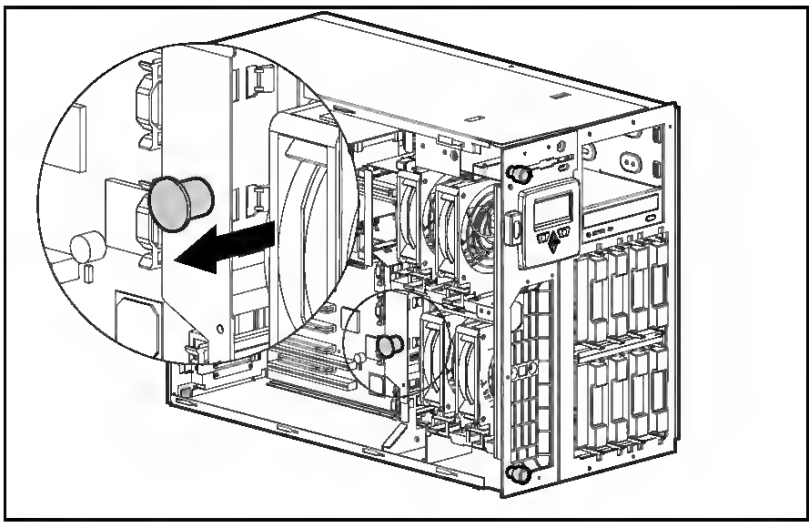

Figure 4-13. Drive cage latch

6. Remove all cables from the back of the drive cage except for the removable media power cable.
7. Completely remove the drive cage.

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If you have removed the drive cage in order to install the Duplex Enable board, procedure with the next topic, "Installing the Duplex Enable Board Option." Otherwise, skip to step 8.

Installing the Duplex Enable Board Option

Be sure you have followed all the steps under "Accessing the Drive Cage Back Plane" before proceeding with the following steps.

a) Remove the Simplex Enable board from the back of the drive cage.

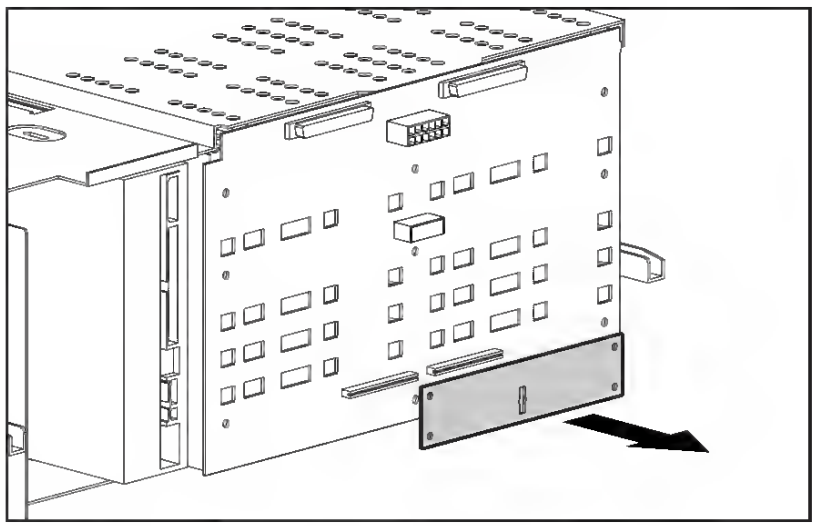

Figure 4-14. Removing the simplex enable board

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b) Insert the Duplex Enable board.

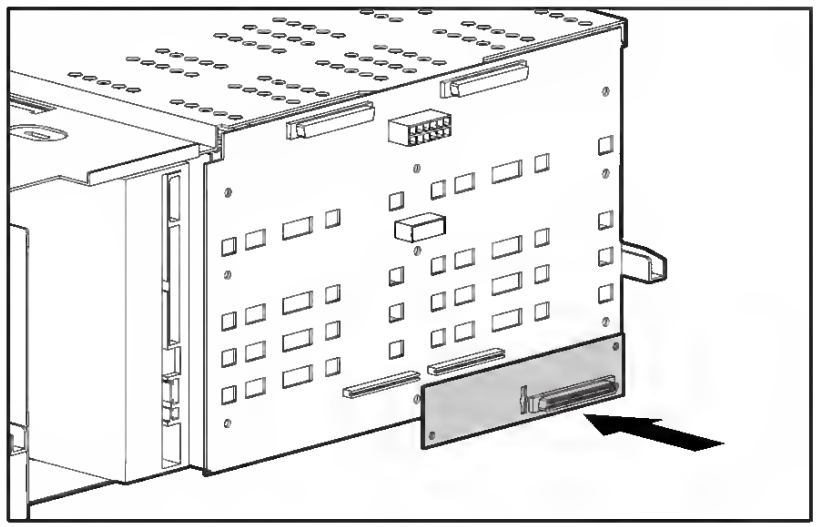

Figure 4-15. Installing the duplex enable board

CAUTION: The SCSI backplane board must have either a Duplex Enable board or a Simplex Enable board installed in order for the SCSI bus to be terminated properly. If neither of these boards is installed, the service LEDs of all drives will light as a warning.

8. Replace the drive cage. Do not push it back fully until after you install cables (Shown in Figure 16).

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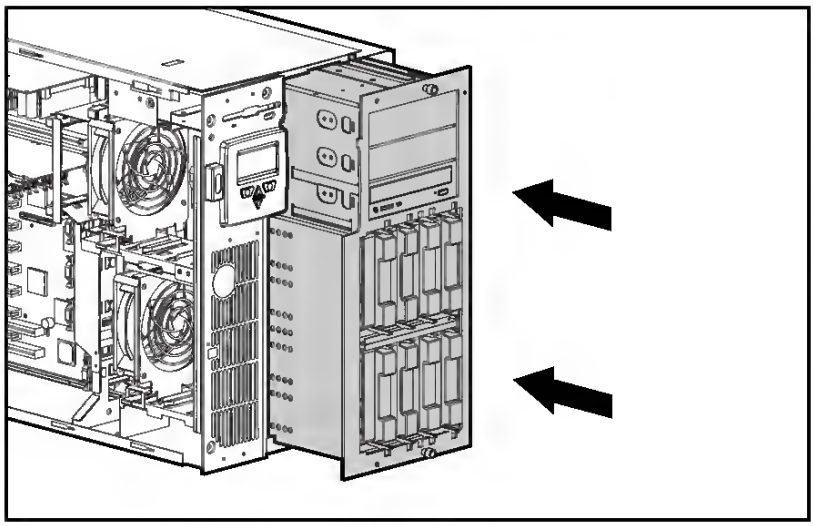

Figure 4-16. Re-installing the drive cage

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9. Reconnect the SCSI cables on the back of the drive cage. Refer to Figure 4-19 connector identification. Refer to *Cabling Guidelines for Compaq ProLiant 3000 Servers* for information on SCSI cabling.

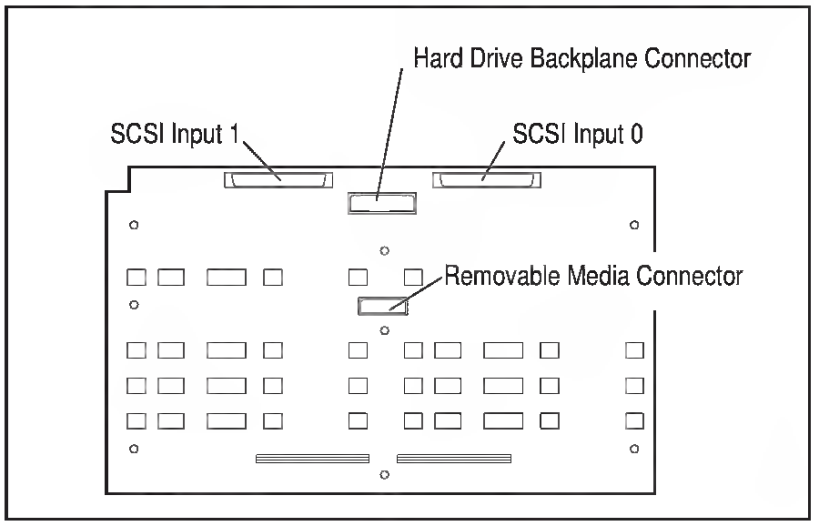

Figure 4-17. Connectors on back of drive cage

10. Pull out the drive cage latch and push the drive cage back fully until the drive cage latch can be pushed into place.
11. Tighten the thumbscrews on the front of the drive cage.
12. Connect SCSI controller cables. See *Cabling Guidelines for Compaq ProLiant 3000 Servers* for more information on connecting SCSI cables. Figure 4-18 shows an example controller connection.

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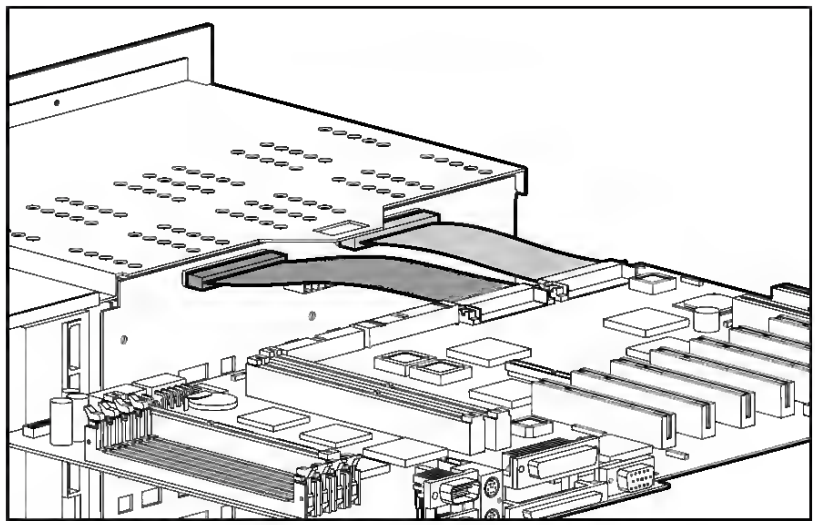

Figure 4-18. Example cable connection to SCSI controller

13. Replace fans.

Replacing the Side Access Panel

Reverse the steps from the "Accessing Processors, Memory Board, and System Board" procedure to replace the side access panel.

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Interlock System

The interlock system prevents power distribution throughout the system if any of the following conditions exist:

1. Top access panel not installed
2. Side access panel not installed
3. Processor or terminator card not fully installed or not properly seated

If any one or more of the above conditions are not met, the main power supply output is disabled; however, auxiliary power still remains in the exposed areas.

WARNING: Compaq ProLiant 3000 Models are capable or producing energy levels that are considered hazardous. To reduce the risk of personal injury:

- Do not attempt to defeat the safety interlocks that prevent access to hazardous energy.
- Do not repair accessories and options inside enclosed or interlocked areas of the system. repair should be performed only by individuals who are qualified in serving computer equipment and trained to deal with products capable of producing hazardous energy levels.

CAUTION: To prevent loss of data or damage to the equipment, place the system in STANDBY before removing the top access panel, side access panel, or processor card. When one of these items is removed, the power supply is disabled until the item is replaced.

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Accessing DIMM Sockets on the System Board

WARNING: Before removing the top panel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

CAUTION: To prevent loss of data or damage to the equipment, place the system in STANDBY before removing the side access panel. When this panel is removed, the power supply is disabled until the panel is properly replaced.

1. Loosen the thumbscrew.
2. Slide the top access panel towards the rear of the unit about 2 inches and lift away from the unit.

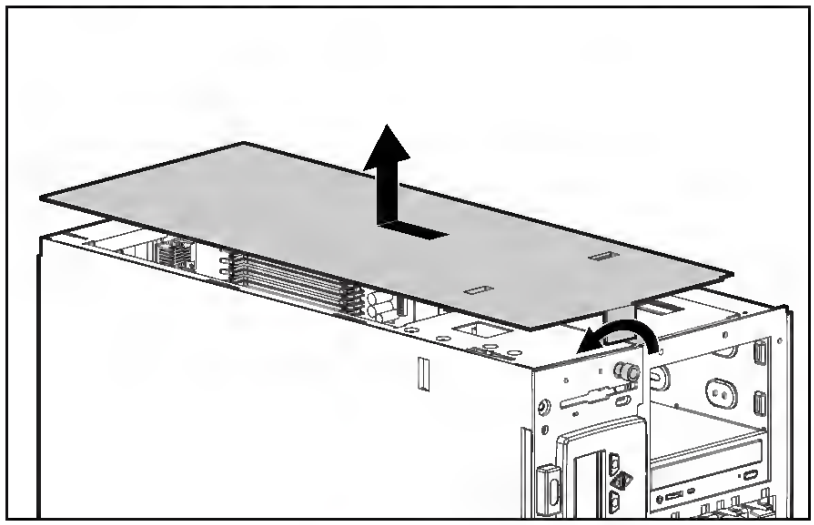

Figure 4-19. Removing the side panel

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3. Install DIMMs. You must add memory by bank, that is, a set of 2 EDO buffered DIMMs at a time. Each bank should contain DIMMs of the same size. For more information on banks, see the section titled "Memory Banks" earlier in this chapter.

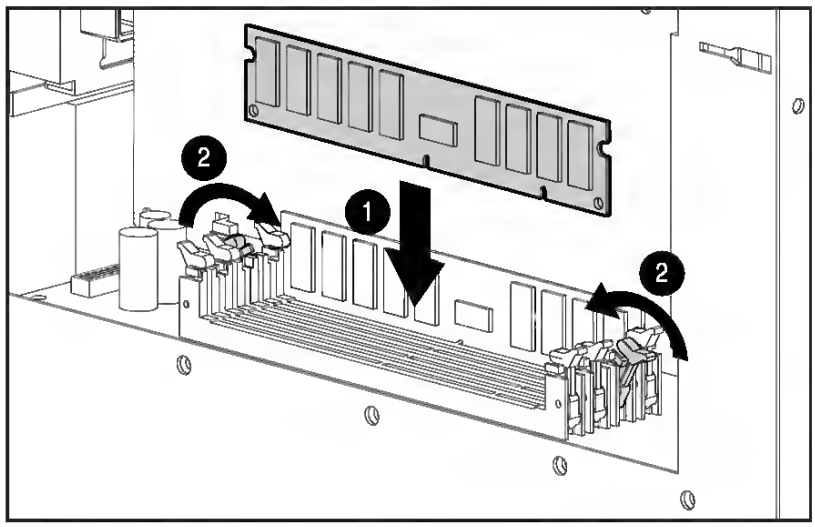

Figure 4-20. Installing system board DIMM banks

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Accessing Hot-Plug Areas

This section describes accessing the following areas:

- Hot-Plug SCSI Drives
- Hot-Plug Power Supplies

Components in these areas have color coded latches or levers to signify that they are hot-plug devices.

Accessing the Hot-Plug SCSI Drives

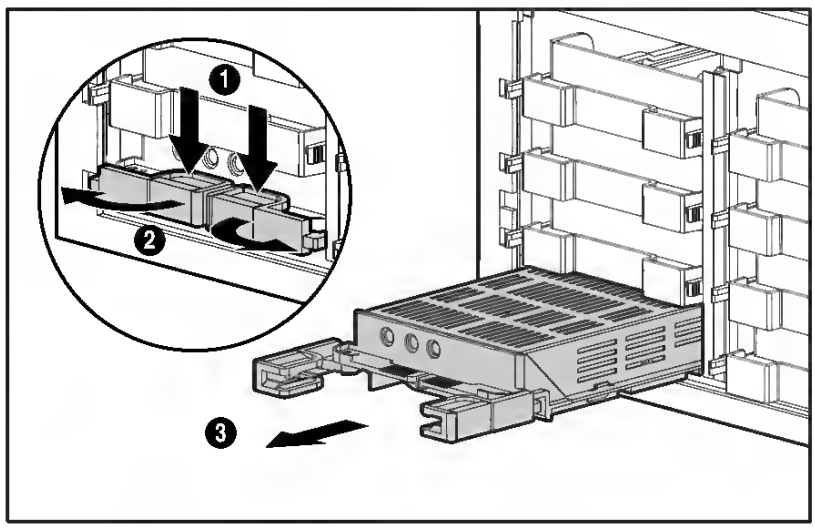

Figure 4-21. Removing a SCSI drive

NOTE: Pinch both sides of drive levers to unlock, then swing the levers out.

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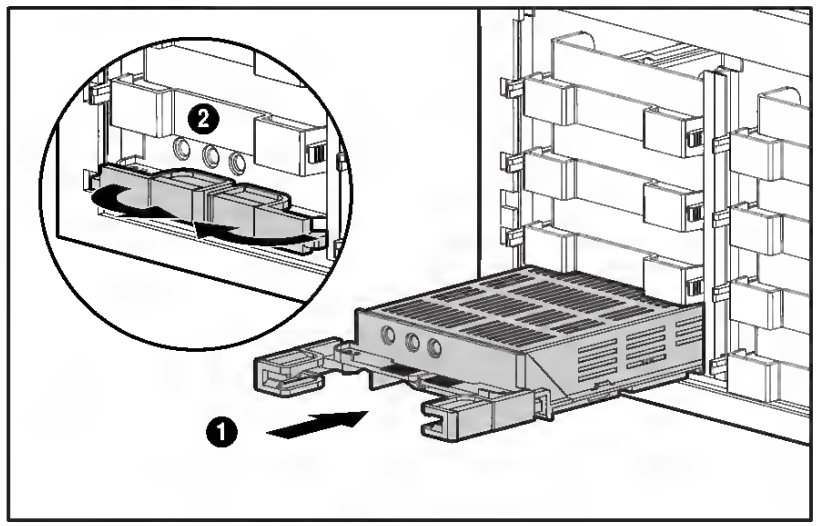

Figure 4-22. Installing a SCSI drive

IMPORTANT: If the drive cage is configured for simplex mode (Pass-Thru board installed) and you are using 1-inch drives, do not use drive bay 7 (see Figure 4-25). If you install a drive in bay 7, the service LED for that drive will light and the drive will be inaccessible.

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SCSI ID Numbers

There are four possible numbering schemes depending on whether you are using 1-inch height drives, 1.6-inch height drives, simplex controller, or duplex controllers. The following four figures illustrate these four schemes.

IMPORTANT: The Simplex Enable board must be installed on the back of the drive cage for the simplex modes and the Duplex Enable board must be installed for the duplex modes.

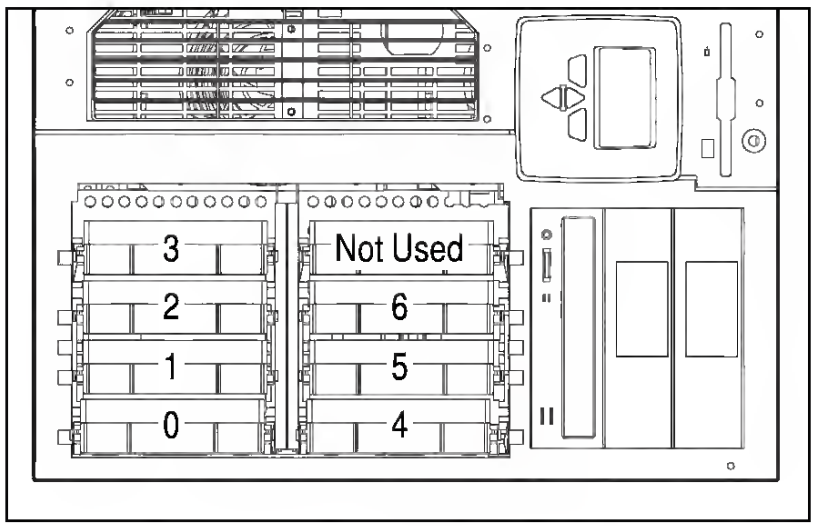

Figure 4-23. SCSI ID numbers - Single SCSI Channel (Simplex Mode) with 1-inch drives

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SCSI Channel A or Channel B	
3	6
1	5
0	4

Figure 4-24. SCSI ID Numbers - Single SCSI Channel (Simplex Mode) with 1.6-inch drives

SCSI Channel A	SCSI Channel B
3	3
2	2
1	1
0	0

Figure 4-25. SCSI ID Numbers - Dual SCSI Channels (Duplex Mode) with 1-inch drives

SCSI Channel A	SCSI Channel B
3	3
1	1
0	0

Figure 4-26. SCSI ID Numbers - Dual SCSI Channels (Duplex Mode) with 1.6-inch drives

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Pre-Failure Warranty

The Compaq ProLiant 3000 server includes Pre-Failure Warranty for Pentium II processors, hard drives, power supplies, and DIMMs purchased from Compaq through an Authorized Compaq Reseller. Supported components are eligible for replacement under this warranty before they actually fail, if the system determines that these components have degraded below predetermined reliability thresholds within the product warranty period.

Insight Manager Alert

When Insight Manager alerts you that a component may be eligible for Pre-Failure Warranty replacement, follow the on-screen instructions or contact an Authorized Compaq Service Provider in your area.

Insight Manager Status Indicator

A yellow status indicator on the Insight Manager control panel indicates that a component is in a degraded condition. Insight Manager recommends that you replace a component that is in a prefailure condition.

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Chapter 5
Server Configuration and Utilities

This chapter describes the tools that Compaq provides to assist you in the configuration and management of your Compaq ProLiant 3000 Server.

Configuring the Server with SmartStart

SmartStart is the intelligent way to configure the server and to load the system software, thereby achieving a well-integrated server to ensure maximum dependability and supportability. The SmartStart and Support Software CD holds the Compaq System Configuration Utility and ROMPaq. To use the SmartStart and Support Software CD, refer to the Server Setup and Management pack included in the shipping box.

To install the Compaq SmartStart and Software Support CD:

1. Turn on the computer.
2. Insert the CD-ROM into the slot handling the CD from the edges, not the flat surfaces of the disc.

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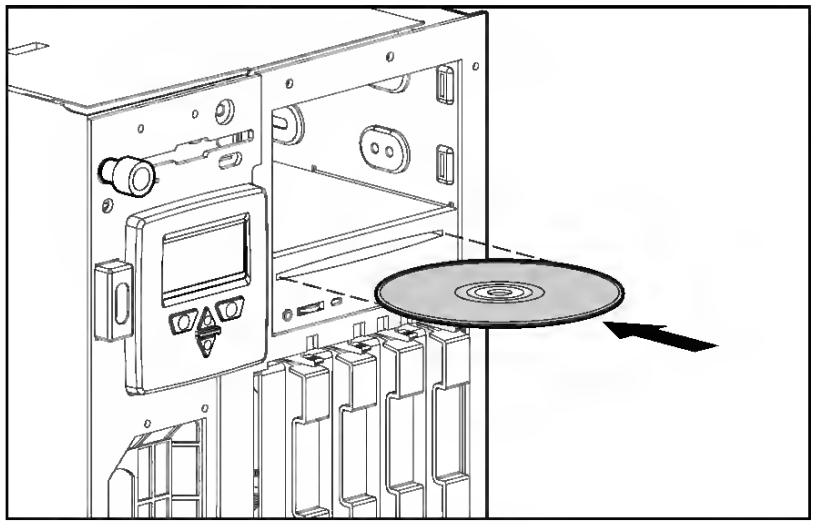

Figure 5-1. Inserting the CD-ROM

3. When the busy indicator turns on, the drive is ready to receive commands and data may be retrieved from the disc.

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Using the System Configuration Utility

The Compaq System Configuration Utility performs a wide range of configuration activities, including:

- Automatically configuring PCI and ISA Plug and Play boards
- Providing switch and jumper settings
- Resolving resource conflicts in areas such as memory, port addresses, and interrupt requests (IRQ)
- Managing the installation of mass storage devices such as hard drives, tape drives, and diskette drives
- Setting and storing power-on features like date and time
- Storing configuration information in nonvolatile memory
- Assisting in installing an operating system
- Assisting in running diagnostic tools such as Test and Inspect Utilities

The first time the server is configured, the SmartStart program automatically creates a system partition and installs the System Configuration Utility and other Compaq utilities in that partition.

IMPORTANT: This Compaq system utilities partition should not be confused with the partition(s) created by your operating system.

In Compaq ProLiant 3000 servers, the system ROM automatically configures memory and processor changes.

The System Configuration Utility uses option configuration (.CFG) files to set up and configure the computer. The .CFG files provide information such as switch settings, IRQs, and software installation guidelines. The .CFG files for Compaq computers are located on the System Configuration diskettes and SmartStart and Support Software CD (SmartStart CD).

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For PCI boards, the utility reads the configuration options from the PCI board's configuration space from a PCI configuration file (.PCF).

- Compaq Option Configuration Files diskette
- Non-Compaq Option Configuration Files diskette
- SmartStart and Support Software CD

The .CFG file provides board resource requirements and switch and jumper setting alternatives. Although ISA boards do not have the automatic configuration capabilities of PCI boards, the System Configuration Utility can allocate system resources to these boards and provide instructions for setting switches and jumpers.

Resolving Resource Conflicts

If you add a PCI expansion board later, the system detects this change when you turn on the computer. The system ROM reads the PCI board identifier and compares it with the current configuration information stored in nonvolatile memory. The system ROM automatically configures PCI boards. If a user selection is required, a POST message directs you to run the System Configuration Utility. Additionally, you may change the default automatic settings by running the System Configuration Utility.

The System Configuration Utility reads the option configuration .CFG files to determine any resource conflicts, such as two devices requiring the same hardware interrupt. If the system identifies a conflict, the software then rechecks all the expansion board specifications to determine if settings for a previously read board can be changed to automatically resolve the conflict between the two boards.

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Starting the System Configuration Utility

To start the Compaq System Configuration Utility for the first time, refer to the SmartStart Installation poster.

After the first time, access the System Configuration Utility as follows:

1. Press the **Ctrl+Alt+Del** keys to reboot the server.
2. When the following prompt appears at the top of the screen during Power-On Self-Test (POST), press the **F10** key. The System Configuration Utility main menu displays the following:

```
Press "F10" key for System Partition Utilities
```

IMPORTANT: The text appears for only two seconds. If you do not press **F10** during this time, you must reboot the server.

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System Configuration Utility Main Menu

This overview of the main menu options overview explains how to access the main menu and how to set the power-on features. The following options are available from the main menu:

- **System Configuration** - Takes you through the configuration process step-by-step. Select the System Configuration option when a configuration change is required. For example, select this option when adding, replacing, or removing expansion boards, or when adding a diskette or hard drive.
- **Operating System Installation** - Allows you to install one of the operating systems listed or to specify installation of an operating system that is not listed.
- **Diagnostics and Utilities** - Tests and inspects the computer.
- **Exit from this Utility** - Restarts the computer.

System Configuration Menu

The following options are available from the System Configuration Utility menu:

- Configure Hardware
- Power-On Defaults
- System Partition
- Configuration Backup

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Configuring Hardware

When you select the Configure Hardware menu, a screen with five steps is displayed. Below is a listing of each step with a brief explanation.

Step 1: Important System Configuration Information

This step provides an overview of the configuration process.

Step 2: Add or Remove Boards

Use this step to add the PCI or EISA boards to the configuration or remove any boards from the configuration.

Step 3: View or Edit Details

Use this step to make necessary configuration changes.

IMPORTANT: If you edit a function or resource in Step 3, be sure also to review Step 4.

Step 4: Examine Required Switches

This step displays the required switch and jumper settings for most ISA boards. Then find the appropriate board's switch and jumper settings and adjust them to match the settings displayed on the screen.

Step 5: Save and Exit

Use this step to save the configuration update when you have made changes.

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Setting Power-On Defaults

You can set and change the Power-On features at any time.

1. Select *System Configuration* from the Main Menu; then select Power-On Defaults.
2. Set the current date in the format:
   MM-DD-YYYY
3. Set the correct time in the format:
   HH:MM:SS
4. Set the Power-On Num Lock state:
   ( ) OFF
   (*) ON

   * This activates the numeric keypad when the computer is turned ON.

System Partition

The System Partition option allows you to copy and delete configuration files, and create, upgrade, or delete a system partition on the hard drive for the utilities.

The following menu options are available:

- Create System Partition
- Upgrade System Partition
- Delete System Partition
- Copy Files
- Delete Files

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Creating a New System Partition

If you used SmartStart to configure your server and install your operating system, this procedure ("Creating a New System Partition") was done automatically for you. Use this procedure only if the operating system was **not** installed on the server and you wish to create a system partition.

1. Insert the Compaq SmartStart and Support Software CD in the CD-ROM drive and turn on the server.

IMPORTANT: The system partition requires about 32 MB of disk space at the beginning of the hard drive and an unused entry in the boot record. SmartStart prompts you to overwrite an existing DOS partition on the hard drive.

---

2. If the system is configured and there is hard drive space for the system partition, SmartStart automatically creates the partition and copies Compaq Utilities from the Compaq SmartStart and Support Software CD to the partition. This process takes two reboots. Leave the CD in the drive until the process is complete. The process is complete when the CD main menu displays.
3. If the system is not configured, select the second or third button on the SmartStart first screen to configure the system automatically.
4. After the system boots to save the configuration, the Compaq SmartStart and Support Software CD creates the system partition and copies the Compaq Utilities to it. This process takes two reboots.
5. Leave the CD in the drive until the process completes. The process is complete when the CD main menu displays.

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Verifying the System Partition

To verify that the system partition exists, follow this procedure:

1. Remove any media from the CD-ROM drive and the diskette drive.
2. Reboot the system by pressing **Ctrl+Alt+Del** or by turning the server OFF and then ON again.
3. Press the **F10** key when the following prompt appears.

```
Press "F10" key for System Partition Utilities
```

IMPORTANT: The text appears for only two seconds. If you do not press **F10** within the two seconds, you must reboot the server.

4. If a system partition exists, the server boots to the partition. If not, a message displays that no system partition exists.

Upgrading the System Partition

To upgrade the system partition, follow this procedure:

1. Insert the Compaq SmartStart and Support Software CD in the CD-ROM drive and turn on the computer.
2. Select *Upgrade System Partition.*
3. Select to upgrade the utilities. SmartStart copies the new utilities from the CD to the system partition.

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Configuration Backup

The Configuration Backup option allows you to create a backup of the system configuration and to restore the system configuration from the backup.

The following menu options are available:

- Backup
- Restore

Configuration Backup and Configuration History Files

When you save and exit the System Configuration Utility, the utility keeps a history of the configuration. The utility maintains three versions of the system configuration files, including the current and two previous configurations in both binary (.SCI) and text (.CHL) file formats.

- The .SCI files can be used to restore a previous configuration using the System Configuration menu and Restore System Configuration from a .SCI File submenu.
- The .CHL files are text-based files displaying information that is stored in the corresponding .SCI file.

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Table 5-1
System Configuration History Log Files

Filename	Description
SYSTEM.SCI	Current configuration information
SYSTEM1.SCI	Previous configuration information
SYSTEM2.SCI	Previous configuration information (oldest)
SYSTEM.CHL	Textual representation of SYSTEM.SCI file
SYSTEM1.CHL	Textual representation of SYSTEM1.SCI file
SYSTEM2.CHL	Textual representation of SYSTEM2.SCI file (oldest)

IMPORTANT: If there is not enough disk space for the entire System Configuration History Log, the utility deletes log files starting with the oldest files (SYSTEM2.SCI and SYSTEM2.CHL) until enough disk space is available for the current configuration backup and history files.

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Configuring PCI Boards Automatically

The system ROM automatically configures PCI boards. If a user selection is required, a POST message directs you to run the System Configuration Utility. Also, you may use the System Configuration Utility to change the default automatic settings.

Removing Boards

System ROM automatically reconfigures the server after a PCI board or DIMM is removed.

Installing an Operating System

Compaq ProLiant 3000 servers support the following operating systems:

- Novell NetWare 3.12, 4.10, 4.11, and IntraNetWare
- Microsoft Windows NT 3.51 and 4.0
- SCO OpenServer 3.0, 5.0, and 5.02
- SCO UnixWare 2.1
- IBM OS/2 2.x, Warp 3.0, Warp 4.0, Warp Server 4.0, Warp Server Advanced 4.0, and Warp Server Advanced with SMP 4.0
- Banyan VINES v 6.00 and above, including VINES 7.00

When you select the Operating System Installation feature from the System Configuration Utility main menu, the utility provides prompts to simplify the installation.

First the utility prompts you to select the correct operating system. Use the arrow keys to select the operating system and press the **Enter** key. The utility then prompts you for the operating system CD or diskette.

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Not all operating systems ship with each server. Consult your local reseller or Compaq Customer Service to get a SmartStart pack with additional operating system support. Some operating systems have driver support/updates but not an integrated SmartStart installation. You can still configure your server and manually install your operating system.

SMP Operating System Support

Compaq provides optimized software support for the Dual Processing Boards for:

- Microsoft Windows NT 3.51 and 4.0
- NetWare 4.11 SMP and IntraNetWare SMP
- SCO SMP OpenServer 3.0, 5.0, and 5.02
- SCO UnixWare 2.1
- IBM OS/2 SMP version 2.11
- IBM OS/2 Warp Server 4.0 SMP

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Loading Compaq Device Drivers

Drivers are located on the Compaq SmartStart and Support Software CD.

IMPORTANT: Always check *README* files on the SmartStart and Support Software CD. If present, these files may contain information about important software updates.

Novell NetWare Device Drivers form Compaq

Your server must have certain device drivers to operate using NetWare. These drivers are located on the Compaq SmartStart and Support Software CD shipped with the server. If you use SmartStart to install the operating system, these drivers will be installed automatically. Otherwise, you can use SmartStart to create Support Software for Novell Products Novell (SSD) diskettes to support a manual installation of Novell products.

For more information on these drivers, run the *README.COM* file in the root directory of the NetWare Programs from the Compaq diskette.

Manual installation

If you choose to configure the server without SmartStart, follow this procedure:

1. Insert the Compaq SmartStart and Support Software CD into the CD-ROM drive.
2. Boot your system.
3. Select *Non-SmartStart Setup*.
4. Follow the instructions provided by the operating system that you are installing.

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Microsoft Windows NT Device Drivers from Compaq

Drivers are supplied to support Windows NT 3.51 and 4.0. They are located on the SmartStart and Support Software Diskette CD, and some of the drivers are contained on the Windows NT retail product. These drivers are also located on the Compaq SmartStart and Support Software CD. The drivers on the SSD may be newer versions with new functionality, problem fixes, and so on. If you use SmartStart to install your operating system, these drivers are installed automatically. Otherwise, you can use SmartStart to create an Windows NT Support Software Diskette (SSD) from Compaq to support a manual installation of Windows NT.

For more information on the drivers, run the *README.BAT* file in the root directory of the SSD for Windows NT. This will load the WinHelp file *NTREADME.HLP*.

Manual installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the SmartStart and Support Software CD into the CD-ROM drive.
2. Boot your system.
3. Select *Non-SmartStart Setup*.
4. Follow the instructions that display on the monitor.

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SCO OpenServer and SCO UnixWare Device Drivers from Compaq

Your server must have certain device drivers to operate under the SCO OpenServer and SCO UnixWare 2.I operating systems. These drivers are located on the Compaq SmartStart and Support Software CD shipped with the server. If you use SmartStart to install your operating system, these drivers will be installed automatically. Otherwise, you can use SmartStart to create a UNIX Support Software Diskette (EFS) from Compaq to support a manual installation of UNIX.

The features requiring device drivers are:

- Compaq Ethernet/Token Ring Adapter
- Automatic Server Recovery-2
- Compaq ProLiant Storage System

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Manual installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the Compaq SmartStart and Support Software CD into the CD-ROM drive.
2. Boot your system.
3. Select *Non-SmartStart Setup*.
4. Follow the instructions that display on the monitor.

IBM OS/2 Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using IBM OS/2 Warp Server 4.0, IBM OS/2 Warp Server 4.0 SMP, OS/2 Warp, OS/2 Warp Connect 3.0, and OS/2 2.x. These drivers are located on the Compaq SmartStart and Support Software CD you received with your server. If you use SmartStart to install your operating system, these drivers are loaded automatically. Otherwise, you can use SmartStart to create an OS/2 Support Software Diskette (SSD) from Compaq to support a manual installation of OS/2.

For more information on these drivers, run the *README.COM* file in the root directory of the OS/2 SSD from Compaq.

Manual installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the Compaq SmartStart and Support Software CD into the drive.
2. Boot your system.
3. Select *Non-SmartStart Setup*.
4. Follow the instructions that display on the monitor.

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Banyan VINES Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using the Banyan VINES operating system. Compaq provides driver support for Banyan VINES 6.00 and above, including the new VINES 7.00.

These drivers are located on the Compaq SmartStart and Support Software CD you received with your server. You can use SmartStart to create a Banyan VINES Support Software Diskette (SSD) from Compaq to support a manual installation of Banyan VINES.

There are two types of SSDs:

- LAN Adapter SSD
- Peripheral Adapter SSD

These SSDs contain the *README* files that list available drivers and driver installation procedures.

These drivers can also be ordered through SoftPAQ and can be downloaded from the Compaq Web site.

Manual installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the Compaq SmartStart and Support Software CD into the drive.
2. Boot your system.
3. Select *Non-SmartStart Setup*.
4. Follow the instructions that display on the monitor.

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Diagnostics and Other Utilities

- When you select the Diagnostics and Utilities feature from the System Configuration Utility main menu, the utility provides prompts to test, inspect, upgrade, and diagnose the server.
- Diagnostics and Utilities are located on the system partition on the hard drive and must be accessed when a system configuration error is detected during the Power-On Self-Test (POST).
- Run the Inspect Utility once the computer has been configured to get information about the operating system environment.
- For instructions on using the Diagnostics Utility and other Compaq utilities, refer to the Compaq Systems Reference Library CD.

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Chapter 6
Integrated Management

This chapter contains instructions and guidelines for using the Integrated Management features in Compaq ProLiant 3000 servers that may not be familiar to you. Subjects covered are:

- Integrated Management Display
- Integrated Management Log

Integrated Management Display

The Compaq Integrated Management Display (IMD) is an integrated, 16x4 character display mounted on the front of the server. This display provides easy-to-use menu-driven access to server information. The following paragraphs provide information on navigating and using the menus.

Normal Run-time Behavior

When powering up the server, the first IMD screen you see shows the model number and LCD firmware revision of your display.

Next, a series of server Power-On Self-Test (POST) operations is displayed. During POST, the display indicates the server test in progress by a spinning bar beside the menu item. When the test is finished, the IMD shows a check mark by the completed menu item. A check mark tells you the test is complete, but does not necessarily mean the test was free from errors.

If an error occurs during POST, the server logs the error to the IMD under Unviewed Events and requires you to view the error before proceeding to any other menu choices.

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If there are no errors, you will see the Idle Screen Text. Figure 6-1 shows the default screen, but this screen could be different if you changed the text during configuration.

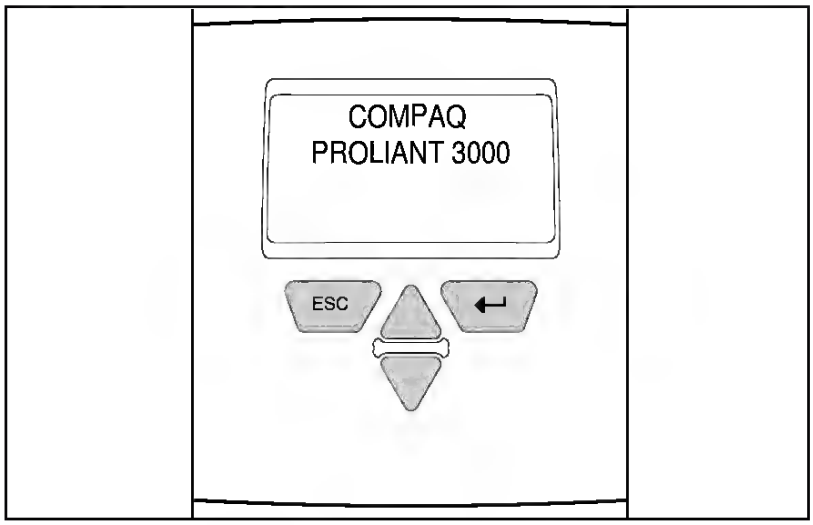

Figure 6-1. Idle Screen Text

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Navigation Buttons

To navigate through the menus, use the four buttons shown in Figure 6-2. The Up and Down arrow keys (❷and ❸) allow you to move through the menu screens and choose menu items. The right button (❹) acts as an Enter key and allows you to travel down through the menus. The left button (❶) acts as an Escape key and allows you to travel back up the menu.

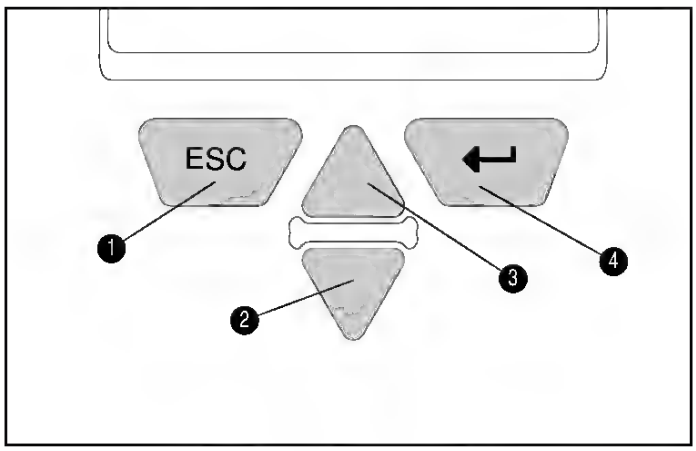

Figure 6-2. Integrated Management Display buttons

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Display Symbols

There are three different display symbols used to indicate your options as you scroll through the menus. These on screen symbols are the Up and Down arrows, and the Selector arrow.

Table 6-1
Integrated Management Display Symbols

Type of Symbol	Symbol	Meaning
Arrow	→	Selector arrow shows current menu item. Press **Enter** on the IMD to select the menu item to the right of this arrow.
Up Arrow	↑	If present in upper right corner, indicates previous information exists. Press the Up Arrow on the IMD to view the information. Press and hold the button to scroll.
Down Arrow	↓	If present in lower right corner, indicates more information exists. Press the Down Arrow on the IMD to view the information. Press and hold the button to scroll.

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System Behavior with Error Events

After system POST, if there is an F1 error condition, the IMD flashes this message:

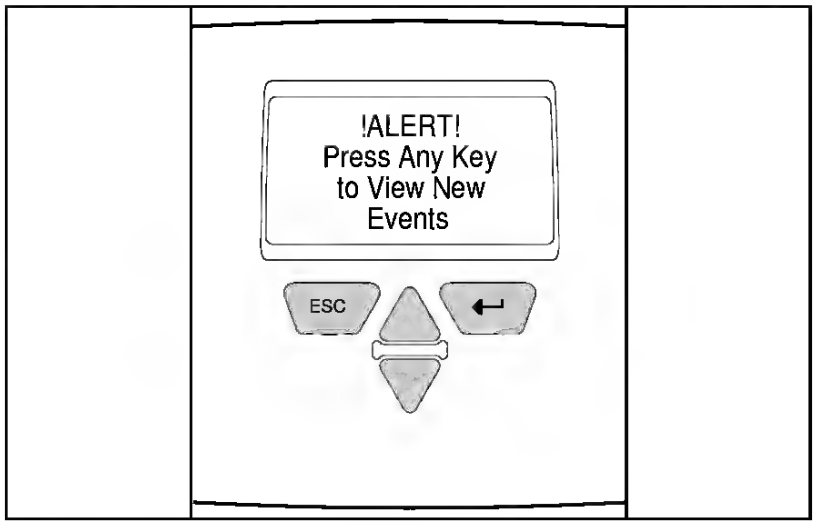

Figure 6-3. New Event Message

At this point you must scroll through each screen of the event information menu before the IMD will allow you to move on to other menu choices. The display will not allow you to escape out of the Unviewed Events section until you have examined all of the information stored here.

For information on interpreting the event messages, see the section titled "Integrated Management Log" later in this chapter.

After you have reviewed the events, you are able to proceed with normal display operation.

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Menu Structure

The following outline shows the structure of each menu and submenu in the order in which it appears:

Events

Event List

Administration Information

- Server
  - Server Name
  - Asset Tag
  - Operating System
  - Other
- Administrator
  - Name
  - Phone
  - Pager
  - Other
- Service
  - Name
  - Phone
  - Pager
  - Other
- Custom Menu Item (if entered)
  - Custom Menu Screen (if entered)

System Information

- ROM Date
- BootBlock Date
- Memory
- Processors

Contrast

- Contrast
- Other Info.

All of these menu items can be changed using the Compaq System Configuration Utility or an operating specific utility. Refer to the Compaq SmartStart and Support Software CD for instructions on installing the appropriate utility.

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Integrated Management Log

The Compaq Integrated Management Log (IML) records system events and stores them in an easily-viewable form. The IML records hundreds of events instead of the 16 events that the Critical and Correctable Error Logs are capable of recording. The IML also marks each event with a time-stamp with one-minute granularity, instead of the one-hour granularity of the previous logs.

Events listed in the Integrated Management Log are categorized as one of four event severity levels:

- Status—indicates that the message is informational only.
- Repaired—indicates that corrective action has been taken.
- Caution—indicates a non-fatal error condition.
- Critical—indicates a component failure.

The Integrated Management Log requires Compaq Operating System-dependent drivers. Refer to Chapter 5, "Server Configuration and Utilities" for instructions on installing the appropriate drivers.

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Multiple Ways of Viewing the Log

You can view an event in the Integrated Management Log in several ways:

- On the Integrated Management Display
- From within Compaq Insight Manager
- From within Compaq Survey Utility
- Using the IML Management Utility, a DOS program located on the Compaq SmartStart and Support Software CD.

Compaq Insight Manager

Compaq Insight Manager is a server management tool providing in-depth fault, configuration and performance monitoring of hundreds of Compaq servers from a single management console. System parameters that are monitored describe the status of all key server components. By being able to view the events that may occur to these components, you can take immediate action. You can view and print the event list from within Insight Manager by following the instructions below. You can also mark a critical or caution event as repaired after the affected component has been replaced, for example, if a fan that has failed has been replaced. By marking it as repaired, you can lower the severity of the event.

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Viewing the Event List

1. From Compaq Insight Manager, select the appropriate server, then select View Device Data.

   The selected server is displayed with buttons around its perimeter.

2. Select the Recovery button.
3. Select Integrated Management Log.

NOTE: You can only view the list from the Recovery/Integrated Management screen. To print the list, follow the instructions below.

4. If a failed component has been replaced, select the event from the list; then select Mark Repaired.

Printing the Event List

NOTE: You can only view the list from the Recovery/Integrated Management Log screen as described above. To print the list, follow the instructions below.

1. From the Insight Manager, select the appropriate server.

   The selected server is displayed with buttons around its perimeter.

2. Select the Configuration button.
3. Select the Recovery button.
4. Select Print.

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Compaq Survey Utility

The Compaq Survey Utility is a serviceability tool available for Windows NT and Novell NetWare that delivers on-line configuration capture and comparison to maximize server availability. It is delivered on the Compaq Management CD in the Server Setup and Management package, or is available on the Compaq web site. Refer to the Compaq Management CD for information on installing and running the Survey Utility.

After you have run the Survey Utility, you can view the Integrated Management Log by loading the output of the utility (typically called "survey.txt") into a text viewer such as Microsoft Notepad. The event list follows the system slot information. Once you have opened the text file, you can print it using the print feature of the viewer.

Compaq IML Management Utility

The Compaq IML Management Utility is a DOS-based tool that gives you the off-line ability to review, mark corrected, and print events from the IML. It is located on the Compaq SmartStart and Support Software CD. Refer to the *SmartStart Installation for Servers* poster for information on how to install and use the IML Management Utility.

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List of Events

The event list displays the affected components and the associated error messages. Though the same basic information is displayed, the format of the list may be different depending on how you are viewing it: on the Integrated Management Display, from within Compaq Insight Manager, or from within the Compaq Survey Utility. An example of the format of an event as displayed on the Integrated Management Display is as follows:

001 of 0I0
---CAUTION---
03/I9/I997
I2:54 PM
FAN INSERTED
Main System
Location:
System Board
Fan ID: 03
END OF EVENT

Table 6-2 identifies the event types (affected components) and associated event messages.

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Table 6-2
Event Messages

Event Type	Event Message
Machine Environment	
Fan Failure	System Fan Failure (Fan X, Location)
Fan Inserted	System Fan Inserted (Fan X, Location)
Fan Removed	System Fan Removed (Fan X, Location)
Fans Not Redundant	System Fans Not Redundant
Overheat Condition	System Overheating (Zone X, Location)
Main Memory	
Correctable Error threshold exceeded	Corrected Memory Error threshold passed (Slot X, Memory Module X)
	Corrected Memory Error threshold passed (System Memory)
	Corrected Memory Error threshold passed (Memory Module unknown)
Uncorrectable Error	Uncorrectable Memory Error (Slot X, Memory Module X)
	Uncorrectable Memory Error (System Memory)
	Uncorrectable Memory Error (Module unknown)
Processor	
Correctable Error Threshold exceeded	Processor Correctable Error Threshold passed (Slot X, Socket X)
Uncorrectable Error	Processor Uncorrectable internal error (Slot X, Socket X)
Host Bus Error	Unrecoverable Host Bus Data Parity Error
	Unrecoverable Host Bus Address Parity Error
EISA Bus	EISA Expansion Bus Master Timeout (Slot X)
	EISA Expansion Bus Slave Timeout
	EISA Expansion Board Error (Slot X)
	EISA Expansion Bus Arbitration Error
PCI Bus Error	PCI Bus Error (Slot X, Bus X, Device X, Function X)

continued

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Event Messages continued

Event Type	Event Message
POST Error	POST Error: Error message
Power Subsystem	
Power Supply Failure	System Power Supply Failure (Power Supply X)
Power Supply Inserted	System Power Supply Inserted (Power Supply X)
Power Supply Removed	System Power Supply Removed (Power Supply X)
Power Supply Not Redundant	System Power Supplies Not Redundant
System Configuration Battery Low	Real-Time Clock Battery Failing
Power Module Failure	A CPU Power Module (System Board, Socket X)
	A CPU Power Module (Slot X, Socket X)
Power Modules Not Redundant	System Power Modules Not Redundant
AC Voltage Problem	System AC Power Problem (Power Supply X)
Power AC Overload	System AC Power Overload (Power Supply X)
Automatic Server Recovery	
ASR Reset Detected	ASR Lockup Detected: Cause
System Lockup	
ASR Reset Limit Detected	
Operating System	
System Crash	Blue Screen Trap: Cause [Windows NT]
	Kernel Panic: Cause [UNIX]
	Abnormal Program Termination: Cause [NetWare]
Automatic OS Shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure
	Automatic Operating System Shutdown Initiated Due to Overheat Condition
	Fatal Exception (Number X, Cause)

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Appendix A
Power Cord Set Requirements

The power cord set meets the requirements for use in the country where you purchased your equipment. The voltage selection switch allows you to select the appropriate line voltage for your server.

Power cord sets for use in other countries must meet the requirements of the country where you use the server. For more information on power cord set requirements, contact your Authorized Compaq Dealer.

General Requirements

The requirements listed below are applicable to all countries:

- The length of the power cord must be at least 6.0 feet (1.8 m) and a maximum of 12 feet (3.7 m).
- The power cord set must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord will be used.
- The power cord set must have a minimum current capacity and nominal voltage rating of 10 A/125 volts AC, or 10A/250 volts AC, as required by each country's power system.
- The appliance coupler must meet the mechanical configuration of an EN60320/IEC 320 Standard Sheet C13 Connector, for mating with the appliance outlet on the computer.

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Country-Specific Requirements

Use the following table to identify the appropriate accredited agency in your country.

Table A-1
Power Cord Set Requirements - By Country

Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	SETI	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

Notes:

1. Flexible cord must be <HAR> Type H05VV-F, 3-conductor, 1.0 mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. Flexible cord must be Type SVT or equivalent, No. 18 AWG, 3-conductor. Wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V).

3. Appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 1.0 mm^2 conductor size. Wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7A, 125V) configuration.

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Appendix B
Regulatory Compliance Notices

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (i.e., personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

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Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

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Declaration of Conformity for Products Marked with FCC Logo, United States Only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For questions regarding this declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or call (281) 514-3333

To identify this product, refer to the Series number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

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Canadian Notice(Avis Canadien)

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity
- EN60950 (IEC950) - Product Safety

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Japanese Notice

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Australian Notice

This customer equipment is to be installed and maintained by service personnel as defined by AS/NZS 3260 Clause 1.2.14.3. Service Personnel. Incorrect connection of connected equipment to the General Purpose Outlet could result in a hazardous situation.Safety requirements are not fulfilled unless the equipment is connected to a wall socket outlet with protective earth contact.

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Laser Devices

The CD-ROM drive contains a laser device. All Compaq systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

Laser Safety Warnings

WARNING: To reduce the risk of fire, bodily injury, and damage to the equipment, observe the following precautions:

- Do not operate controls, make adjustments, or perform procedures to a laser device other than those specified herein or in the CD-ROM drive installation guide.
- Allow only Compaq Authorized Service Technicians to repair the laser equipment.

Compliance with CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Compliance with International Regulations

All Compaq systems equipped with CD-ROM drives comply with appropriate safety standards including IEC 825.

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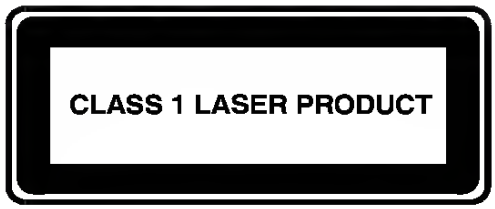
Laser Product Label

The following label or equivalent is located on the surface of your CD-ROM drive.



This label indicates that the product is classified as a CLASS 1 LASER PRODUCT. This label appears on a laser device installed in your product.

Laser Information

Laser Type	Semiconductor GaAlAs
Wave Length	780 nm +/- 35 nm
Divergence Angle	53.5 degrees +/- 0.5 degrees
Output Power	Less than 0.2 mW /10,869 $W \cdot m^{-2} sr^{-1}$
Polarization	Circular 0.25
Numerical Aperture	0.45 inches +/- 0.04 inches

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Battery Replacement Notice

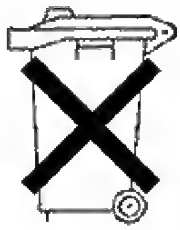
Your computer is provided with a battery powered Real-Time Clock circuit. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Replacement is to be done by a Compaq Authorized Service Provider using the Compaq spare designated for this product. For more information about Real-Time Clock battery replacement or proper disposal, contact your Compaq Authorized Reseller or your Authorized Service Provider.

The computer contains an battery. Replacement of the internal battery should be done by a Compaq Authorized Service Provider.

WARNING: To reduce the risk of personal injury, do not attempt to recharge the battery, disassemble it, immerse it in water, or dispose of it in fire.

Your computer contains an internal battery pack. There is risk of fire and burns if the battery pack is not handled properly. Replace only with the Compaq spare designated for this product.

WARNING: To reduce the risk of personal injury, do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water. Do not expose to temperatures higher than 60°C.



Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. In order to forward them to recycling or proper disposal, please use the public collection system or return them to Compaq, your authorized Compaq Partners, or their agents.

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Appendix C
Internal CD-ROM Drive

The Internal CD-ROM drive is a random access, read-only storage device capable of retrieving data from removable compact disc media, which can store up to 680 Mbytes of digital information.

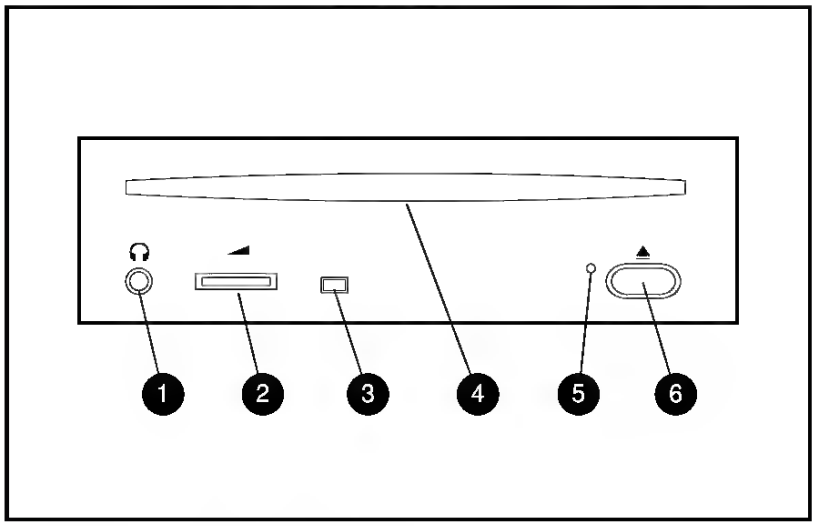

Figure C-1. Internal CD-ROM front panel

Table C-1
Internal CD-ROM

Ref	Component	Function
1	Headphone Jack	Connects the headphone
2	Headphone Volume Control	Increases or decreases the headphone volume
3	Busy Indicator	Turns green when a disc is present; flashes amber when the drive is reading a CD
4	CD Slot	Holds the CD
5	Manual Eject Hole	Allows you to manually eject a CD if the load/unload button is inoperable
6	Eject Button	Ejects the CD

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